Planning National Malaria Research in Kenya 1977-2010:

Space and Place in Global Biomedicine

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Declaration

I, Lauren Hutchinson, 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…….

ABSTRACT

This thesis looks at the 1970s in Kenya as a crucial point of re-organisation of science following political independence and the collapse of the East African Community. In particular it examines the national context of scientific research between 1977 and 1979. It then considers how the national level changes were carried out in practice by following the malaria research institute, a branch of the Kenya Medical Research Institute (KEMRI), between 1979 and 2010. The aim is to explore the way in which visions of malaria research in this place reflected wider issues of national identity and nation building and how these changed and were remembered over time.

Based on archival research and oral histories, and situated in a specific place in the west of Kenya, the thesis asks: what kind of science was planned by East African scientists in the 1970s? What questions did the scientists want to ask about malaria? How did the science planned relate to the political context? In what ways did scientists envision and frame their collaborations within the broader context of global biomedical research?

By exploring these questions, it becomes apparent that the 1970s was a particular time of doing research in Kenya. This was a time in which Kenyan scientists envisioned making malaria science which was relevant to the context of Kenya, and at times infused with an ethos of African socialism. They planned on collaborating with the international community whilst also being self-sufficient. In practice, however, these hopes were constrained by the particular context of doing science in this place. With limited government funds going into science, foreign investment increased. Over time the vision of science changed from locally appropriate science to global visions, where the purposes of science became dislocated from local concerns.

ACKNOWLEDGEMENTS

First of all, thanks and acknowledgement go to Dr John Vulule and all the staff at KEMRI who were a part of this, for making me feel welcome and sharing your important story(s) with me. The stories of dedication I read amongst the archive documents kept me going throughout the thesis. Lots of people have advised and supported me in the process of this thesis. I grateful to Marco Liverani and Nicki Thorogood for taking me on as supervisors. I am aware that taking on a project which I had already started must not have been an easy task. Your patience and guidance have been tremendously helpful. I am also grateful to Virginia Berridge for stepping in at an earlier crucial stage and guiding me and for restoring my faith in academia. Nova Matthias's patience, support and expertise is something which I wish every PhD student could have. Also thank you to Nova for proof reading the thesis. John Porter has been a mentor since the very beginning of my time at LSHTM. John Porter and Simon Cohen also read my thesis in the later stages for which I am grateful. Going to a workshop in Aachen, Germany organised by Iris Borowy and Walter Bruchhausen proved very inspiring and I am grateful for their comments on what became chapter 7.

My time in Kenya would not have been the same had I not been there with Quentin Mercurol. I will always be grateful for the home, love and laughter that we shared. Along with Quentin being hosted by Joanna, Jared and Aunty meant we were always in good company. I am also grateful for the company of Loice, Boni, Moses, Phyllister, Milicent and Frederick. One of the benefits of taking so long to complete a PhD is the extra length of time you have for friendships to develop. Sarah Milton has been there right from the start. Alongside Sarah, with Patricia Kingori I have now been through so much that I am sure we will forever be bonded. I look forward to many more dinners with Meghna, Melissa, Adrianna, Laura, Liz and Bernie. Andy, Tryantafyllos, Jennifer, Coll, Ruth, Emma, Landon, Soloman and Catherine and many more have all created a supported environment. There have been staff members at LSHTM who have gone above their roles in support of this thesis, most notably Linda Amarfio, Ben Armstrong, Judy Green, Ingrid James, Ifitikah Khan and Susan Quarrel. Alongside LSHTM my affiliation with the Department of Science and Technology at UCL since undergraduate is somewhere I continued to be inspired. It was also there that I met Stephen Casper who has always stepped up when I needed him and reminded me what an academic really is. Another person like this is Clapperton Chakanetsa Mavhunga who has been an amazing friend and inspiration especially over the past year. Finally, my loving and supportive friends and family in London, Oxford, Berlin, Philadelphia and Ipswich have been the ones who have kept me sane and reminded me how to have fun during this lengthily process. I look forward to being more present from now on.

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ABBREVIATIONS

CDC – United States Centre for Disease Control

CDF - Colonial Development Fund

CGHR – Centre for Global Health Research

CRC – Clinical Research Centre

CRC – Clinical Research Centre

DDT - Dichlorodiphenyltrichloroethane

DNA - Deoxyribonucleic acid

EAC – East African Community

EAMC – East African Medical Community

EIR – Entomological Inoculation Rate

GDP – Gross Domestic Product

GPS – Geographic Positioning System

HIV/AIDS - Human immunodeficiency virus infection / acquired immunodeficiency syndrome

IBEA – Imperial British East Africa Company

JICA – Japan International Collaborating Agency

KAP – Knowledge, Attitudes and Practices

KEMRI – Kenya Medical Research Institute

KETRI – Kenya Trypanosomiasis Research Institute

KSh – Kenyan Shillings

KSM – Kisumu

LSHTM – London School of Hygiene and Tropical Medicine

MOPDRC – Malaria and Other Protozoal Diseases Research Centre

MRC – Medical Research Council (UK unless specified)

NCST – National Council of Science and Technology (Kenyan unless specified)

NGO – Non-governmental organisation

ODA – Overseas Development Agency

OMS-43 – Fenitrothion insecticide

STS – Science and Technology Studies

UK – United Kingdom

UN – United Nations

USAID - United States Agency for International Development

USSR – Union of Soviet Socialist Republics

VBCRC – Vector Biology and Control Research Centre

VHH – Village Health Helpers

WHO – World Health Organisation

WHOPES – World Health Organisation Pesticides Evaluation Scheme

WRIAR – Walter Reed Army Institute of Research

CHAPTER 1. THESIS INTRODUCTION

1.1. OVERVIEW

In 1963, Kenya gained independence from British rule after a long and sometimes bloody fight for independence. This transition to independence affected private lives and public institutions. Historians and anthropologists have explored the way in which political independence in Kenya and the subsequent decades have impacted and interplayed with personal biographies, family ties, and political aspirations.[1] There has been historical literature exploring the triumphs and tribulations of politicians in the building of a modern Kenya following independence.[2] These themes have also been explored in academic literature on the work of artists, novelists and playwrights in the making of a nation.[3] However there has been very little literature on the role of science in the building of a nation from the perspective of Kenyan scientists.

The 1970s has been noted by historians as a time of hope in Kenya for doing science, a particular time of opportunities.[4] Drawing from literature on the building of a nation in Kenya alongside broader literature on the history of biomedical collaborations, this particular time could, in some ways, be considered to be a paradox for scientists in Kenya. Political independence had finally occurred, yet biomedicine, especially during the 1970s, was highly collaborative on a global scale. The absence of historical work on this period of science in Kenya in the 1970s means that we do not know what these plans of science were, and how the changes over time were experienced by those who made the plans.

In order to narrow down the broad themes of this thesis, the case study of a malaria research institute has been chosen to focus on in depth. The research institute was built in Kisumu, Nyanza Province. This thesis uses the case study of a particular

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[1] Mutongi, K. (2007). Worries of the Heart: Widows, Family and Community in Kenya University of Chicago Press

[2] Branch, D. (2011). Kenya: Between Hope and Despair, 1963-2012. USA, Yale University Press.

[3] Ngugi, W. T. (2002). A Grain of Wheat UK, Penguine Classics

[4] Ombongi, K. (2011). The Historical Interface between the State and Medical Science in Africa: Kenya's case. Evidence, Ethos and Experiment: The Anthropology of Medical Research in Africa P. W. Geissler and C. Molyneux. Oxford Berghahn Publishers.

disease - malaria - and a building set up to tackle this disease, in order to look at the relationship between science and the building of a nation in Kenya in the late 1970s.

1.2 AIMS AND OBJECTIVES

The aim of this thesis is to explore the ways in which the visions of malaria research in Kenya reflected wider issues of national identity and nation building, alongside local and international changes in the 1970s and how these changed and were remembered over time. The objectives are:

- To map out the national context of medical research in Kenya in the 1970s.
- To map out the local context of medical research in Nyanza in the 1970s.
- To interrogate the relationship between Nyanza and the international context of science in the 1970s.
- To map the interplay between local, national and global context over time and how this relates to the medical research that was done.

1.3 NYANZA PROVINCE, KENYA

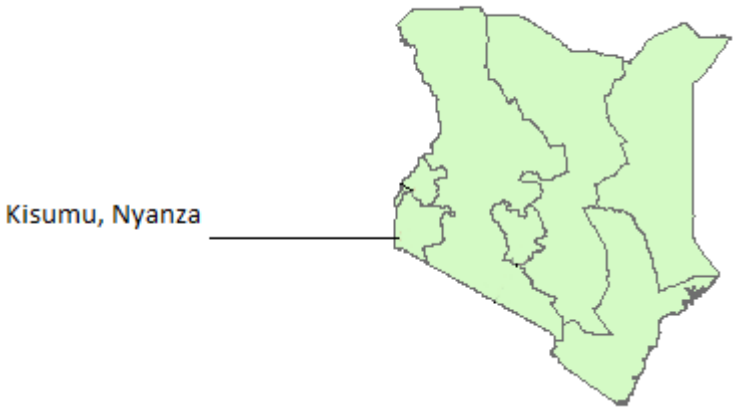

FIGURE 1 MAP OF KENYA SHOWING NYANZA PROVINCE

Nyanza Province is one of seven provinces in Kenya. Kisumu, the capital of Nyanza is the third largest city in Kenya with a population of around 500,000. It was estimated that historically approximately 100,000 people in Nyanza Province have participated in medical research. Over time this had included research on malaria, HIV/AIDS, tuberculosis and cancer, ranging from operational research to stool tests. The

economic context of Kisumu, with high levels of poverty and disease, makes the area a complicated place for a disease focused research institute. What I am interested in here is the dovetailing of this economic decline, with the arrival of new technologies, both high-tech and low-tech, to Kisumu, for the purpose of research. I am interested in how these changing dynamics and technological possibilities impacted upon imaginations for the scientists themselves; of what science can do, what is hoped for and what is imagined possible? I aim to capture how malaria scientists have forged careers, orchestrated the building of Centres and thought about malaria during these changing times in the name of making knowledge about malaria in this particular place.

The local, national and international context in which malaria research was made in Kenya in the 1970s is explored from the perspective of the East African scientists based in Nyanza Province. I consider what independence meant for the scientists involved in the planning of science after political independence. This is done by focusing on a particular group of scientists, who experienced both political independence and the collapse of the East African Community (EAC) and a subsequently internationalised parastatal science. What kind of science was planned by the East African scientists? What kind of questions did they want to ask? How did the science planned relate to politics? Given that, especially in Kenya, there had been a long and sometimes violent fight for political independence, in what ways did the scientists now consider that they would collaborate within the broader context of global biomedical research? How was this complex interplay navigated by these scientists? And how did this particular time become remembered?

1.2. Theoretical and Methodological Approach

This thesis is based on various historical research methods, including oral histories documentary analysis and the analysis of visual materials, such as photographs and maps, which all centre on the setting up of this malaria research institute in 1979; and the way this research institute was and was not remembered in 2010.

This thesis focuses in-depth on the re-organisation of medical research in Kenya on a national level between the years 1977 and 1979. It then considers how this re-organisation was carried out in practice by focusing on a particular malaria research institute, based in Nyanza Province, between 1979 and 2009. Inherent in these approaches to thinking about science, is the emphasis on the notion of science as not being universal, and instead being specific to the context in which it is made, used and transported.[5] When approaching the history of science this includes the motivations of people who conceive of the ideas of science; the buildings in which science is made; the city in which these buildings are located; the national context of this city; and the global context.

Malaria and the way in which knowledge about this disease is made is a particularly fruitful avenue for analysis. Histories of the disease have shown that an awareness of this disease and impacts upon humans has been around for thousands of years.[6] For the purpose of this thesis, the production of knowledge about malaria is considered in relation to the specific context within which the knowledge is being produced. Histories of malaria research have shown the way in which the approaches tackling the disease have reflected broader political philosophies dominant at the time. For example, whether approaches to the disease should favour social or technological dimensions.[7] Therefore, what is interesting to trace over time is whose ideas about malaria research become crystallised and whose do not. This is especially interesting at a crucial time of nation building, for a nuanced understanding of post-colonial developments in this context. As a case study for exploring these themes, this thesis looks specifically at one research institute based in the west of Kenya which was set up in the 1970s in order to tackle malaria. It was set up by colonially trained East African scientists following the collapse of the EAC. It was the first time that national malaria research was being planned in Kenya following political independence.

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[5] Harwood, J. (1993). Styles of Scientific Thought: The German Genetics Community, 1900-1933. Chicago, USA, University of Chicago Press.

[6] Honigsbaum, M. (2001). The Fever Trail: The Hunt for the Cure for Malaria London, Macmillan.

[7] Litsios, S. (1996). The Tomorrow of Malaria,Pacific Publishing

When thinking about the past of malaria in a place, the full complexity of malaria becomes increasingly apparent. When trying to capture the changes of malaria in Kisumu, one can focus on the biological; or the mosquitoes and how they have changed. Alternatively, one could attempt to consider the number of people suffering from the disease; or the changing techniques of intervening into the disease. This thesis is concerned with how narratives of progress, with regards to post-colonial science can be broadened to listen to more subtle, complicated narratives of change over time to understand more about the history of Kenya. Alongside contributing to literature on the history of science, and science and place, this thesis will also contribute to understandings of science within the specific political-historical context of Kenya as a newly-formed nation.

1.3. CHAPTER OUTLINE

Historiography of medical research in Africa

This chapter summarises the way in which historians have approached medical research in Africa in general. Broadly, this is a historiography of medical research in Africa. It is also a critique of two overarching ways in which the history of medical research in Africa has been written about. Firstly, the celebratory accounts of tropical medicine, which tend to take a 'Whiggish' approach to history and be written by those involved in the research (such as biographies). Secondly, the critical literature, which has tended to focus on what colonialists *did.* When the time period extends to the post-colonial, this approach continues, and becomes the focus on what former colonial institutions *still do*, or what neoliberal institutions *have done* in Africa. In addition, this chapter summarises studies that have been particularly useful in providing the intellectual foundations of my research, such as the post-colonial historiographies of science in South America and India, which focus on the plans of scientists just before and soon after political independence. This is considered alongside STS literature and environmental histories, which look at the relationship between place and the epistemology of science.

Methodological approach

This chapter explains the methodological approach to this thesis. It starts by describing the theoretical literature that informed the methodological approach to the thesis. It then describes the practical aspects of collecting the sources and conducting the interviews. It concludes by describing how I read and analysed the sources. I reflect continually through the chapter on the methodological choices I made and the implications these had on the research.

The History of medical research in Kenya

This chapter summarises the secondary source literature covering the history of the organisation of medical research in Kenya. The first section outlines the organisation and development of colonial medical research in Kenya, with a focus on malaria research. The chapter then covers the period of political independence in Kenya and the relationship between the political context and the organisation of medical research in newly independent Kenya.

Planning national science in Kenya 1977-1979

This chapter is based on historical analysis on a national level and explores the 1970s as a key time of change for the conduct of biomedical research in East Africa. It begins by focusing on the collapse of regional, collaborative research between Kenya, Uganda and Tanzania in the late 1970s following the political collapse of the EAC. It argues that with this collapse, the late 1970s was the first time that the newly independent governments of Kenya, Uganda and Tanzania were conducting and planning national research. This chapter then focuses on Kenya and uses archival material to look at the political reorganisation of biomedical science at the national level in Kenya. It follows the plans in Nairobi for the setting up of a National Council of Science and Technology (NCST), and the 1979 Act which resulted in the establishment of KEMRI, the Kenya National Research Institute. In doing so, it looks at the interplay and sometimes convergent and divergent tangents between science and notions of 'development' in this period of time. It then introduces the scientific branches of KEMRI. Throughout the chapter, what was and what was not new about the 1970s as a time of change for the organisation of science in Kenya is considered.

The places of post-colonial 'national' science

This chapter focuses specifically on the malaria branch of KEMRI in Nyanza Province. Archival documents are used to analyse and understand the plans of Kenyan malaria researchers. In looking in-depth at the scientific proposals, we see that for the first time in Kenya, and Nyanza, science with the political epistemology of the nation of Kenya is beginning to be conceived of. The chapter also follows the infrastructure by looking at the architectural plans of the building of this research institute. Paying in-depth attention to the building and the place in which it is located makes visible the practical and political concerns of building up a new research institute and laboratory in Kenya as a Kenyan in the 1970s. Therefore, this chapter shows that for Kenyan scientists, while it was a time of being able to plan their own style of malaria research, their hopes were constrained by the structural context - local, national and global - of conducting biomedical research as a Kenyan scientist in Nyanza. It follows the way in which the building of this infrastructure linked the scientists in multiple ways with the local, national and international context of the 1970s, from the perspective of Nyanza Province.

Placing post-colonial transnational science

This chapter sets the scene of Nyanza Province, Kenya following political independence by looking at the first two large scale biomedical research studies conducted in Nyanza soon after independence. We see that these studies, conducted by Northern institutions, and detached from the place in which the research was being conducted, had many of the tensions of conducting science 'from afar' attributed to colonial science. It is shown that the area surrounding Kisumu gets used in a different way by each institution and how the place becomes connected to post-colonial ambitions of former colonial institutions and also the ends of the malaria eradication campaign. This chapter highlights the tensions between scientific experimentation and intentions to improve health when research priorities and approaches are not being generated from the locations in which the research is to be conducted. It shows that after political independence happening in 1963, biomedical research in Nyanza was becoming increasingly attractive to overseas researchers.

This summary is used here as the contextual backdrop of biomedical research in post-independent Nyanza.

Nyanza as somewhere to test versus exploring malaria in a place, 1980-2009

This final empirical chapter shifts in time but stays in the same place. It shows and reflects on the way in which the imagined possibilities of making malaria science in this particular place changed over time between 1980 and 2009. This is done through oral history interviews and analysis of scientific outputs.

Discussion and Conclusion

This chapter summarises the main historical findings and considers what this thesis contributes to the broader literature. In the first concluding section, this thesis is considered with regards to the way in which historians have previously written about KEMRI and also the history of Kenya. It discusses the value of recording lesser heard histories. Secondly, the thesis is discussed with regards to what could be contributed to malaria research and how the past is written about in terms of malaria. Thirdly this chapter discusses the unique way that space has been approached in the thesis and how this contributes to broader literature on colonial and post-colonial medicine.

CHAPTER 2. HISTORIOGRAPHY OF MEDICAL RESEARCH IN AFRICA

2.1. BACKGROUND

This chapter summarises the broader historiography of medical research in Africa and considers the way that this medical research has been approached by historians. This is done in order to position this thesis within this broader body of literature. The overall aim of this chapter is to provide, through selective reference to the literature, an overview of what has been written about malaria in Africa, with a particular emphasis on research, institutions and place, which are key themes of the thesis. This review includes literature from the history of medicine, African studies, public health history, colonial history and the application of an STS perspective to colonial medicine.[8] Occasionally, literature is drawn from outside the geographic region of Africa; this is when it covers relevant themes, such as post-colonial science and research, and highlights interesting debates over science and the localisation of medical research. In addition, literature on medical research in general, which is not specific to malaria research, is drawn from when relevant themes are covered.

2.2 CELEBRATORY HISTORIES OF RESEARCH IN AFRICA

There are many celebratory histories of tropical medical research including ones on Africa. Histories of research in Africa have often been recalled by following the narrative of particular people.[9] Sometimes they were written by scientists or doctors, who had personal experiences of working in Africa. An example being the doctor

[8] Using the research pro tool at the Wellcome library, the key terms of History and malaria were used to search the history of medicine database. This resulted in 240 books and articles of which 186 were analysed more in-depth. In addition to this the key words malaria+history+Africa were used in order to search the way in which other disciplines had approached the presence of malaria in Africa. The disciplines included are African American Studies, American Indian Studies African Studies, Asian Studies, British Studies, History, History of Science and Technology, Irish Studies, Latin America , Middle Eastern Studies , Religious Studies and Slavonic Studies . This resulted in 1525 articles, of which 210 were considered as relevant. This was in combination to manual searches and collecting further sources cited in these above sources.

[9] Durmett, R. E. (1968). "The Campaign against Malaria and the Expansion of Scientific and Medical Sanitary Services in British West Africa, 1898-1910." African Historical Studies **1**(2): 153-197. Carlson, D. G. (1984). African Fever: A study of British Science, Technology, and Politics in West Africa, 1787-1864 Canton, Science History Publications, Fox, C. (2008). Mosquito Net: A story of the pioneers of tropical medicine Manchester, i2i Publishing Nye, E. R. (2010). Malaria Letters: The Ross - Laveran Correspondence 1896-1908. Dunedin, Otago University Press.

turned historian, Dennis Carlson, who wrote about malaria in West Africa 1787-1864, following the narrative of 'British Science'.[10] Another approach of historians has been to follow the stories of 'great individuals' of malaria research, such as Ronald Ross, credited with the discovery of malarial parasites in mosquitoes, or other celebrated malaria scientists, such as Manson, Reed and Grogas.[11] Through the historical analysis of the correspondence and publications of these scientists, we get a deeper understanding of the debates, fortune and serendipity of malaria science. However, these studies tend to take a Whiggish celebratory approach to history, seen as a form of linear progress of the developments of tropical medicine.

2.3 Critical Histories of Colonial Science

From the 1980s onwards, historians began to take a more critical approach when writing about colonial science in Africa. Incorporating the theory of scientific knowledge and what kind of science is produced, historians of science asked questions of colonial power relations with regards to research institutions. In doing so, historians used malaria as a lens to examine and illustrate the way in which encounters with western medical discourse and establishment in colonial settings played a role in shaping particular professions, institutions and medical theories.[12] For example, Clark looked at the way in which the securing of the combining of the career of entomology with tropical medicine created an '*increasingly self-conscious body of professional, expert, economic entomologists.'*[13]In a similar approach, Tilley

[10] Durmett, R. E. (1968), Carlson, D. G. (1984).

[11] Bynum, W. F. and C. Overy, Eds. (1998). The Beast in the Mosquito: the Correspondence of Ronald Ross and Patrick Manson. The Wellcome Institute Series in the History of Medicine Amsterdam Editions Rodopi. Fox, C. (2008). Mosquito Net: A story of the pioneers of tropical medicine Manchester, i2i Publishing Nye, E. R. (2010). Malaria Letters: The Ross - Laveran Correspondence 1896-1908. Dunedin, Otago University Press.

[12] Crozier, A. (2007). Practising Colonial Medicine: The Colonial Medical Service in British East Africa London, I.B. Tauris Litsios, S. (1996). The Tomorrow of Malaria Pacific Publishing, Clark, J. F. M. (2001). "Bugs in the System: Insects, Agricultural Science, and Professional Aspirations in Britain, 1890-1920." Agricultural History **75**(1): 83-114. Home, R. W. (2002). "The Royal Society and the Empire: The Colonial and Commonwealth Fellowship Part 1. 1731-1847." Notes and Records of the Royal Society of London **56**(3): 307-332. Home, R. W. (2003). "The Royal Society and the Empire: The Colonial and Commonwealth Fellowship Part 2. After 1847." Notes and Records of the Royal Society of London **57**(1): 47-84. Power, M. and J. D. Sidaway (2004). "The Degeneration of Tropical Geography" Annals of the Association of American Geographers **94**(3): 585-601. Tilley, H. (2004). "Ecologies of Complexity: Tropical Environments, African Trypanosomiasis, and the Science of Disease Control in British Colonial Africa, 1900-1940." Osiris **19**: 21-38 Rafferty, A. M. (2005). "The Seductions of History and the Nursing Diaspora" Health and History **7**(2): 2-16.

[13] Clark, J. F. M. (2001)

explored the way in which practices in tropical Africa impacted upon British Institutions.[14] Tilley explored the colonial period as a process of the development of new scientific specialisms and research practices in the UK. Tilley makes visible how the colonial period was at a time where imperial powers were able to build up '*infrastructure for research, experimentation and biomedical provision.'*[15] Colectively these histories showed the way in which researchers from the UK were able to build up infrastructure both in the UK wih instiutions such as LSHTM and also by becoming allied with institutions abroad.

Historians have also explored the way in which urban development policies in Africa during the colonial period were intricately linked to justifications used in malarial hygienic discourse. [16] For example, Spitzer discussed how the planning of the segregation of cities was influenced by the contemporary theories of malaria.[17] These historians have also drawn attention to the material legacies of particular medical epistemologies upon African urban landscapes. For example, pointing out that Hill Station remains as a monument to '*the deterioration of the British experiment in philanthropy and racial equality'.*[18]

Historians of colonial medicine in Africa (not solely limited to malaria research) have also written about the way in which Western medical discourse co-constructed colonised identities.[19] Packard outlined how the construction of a 'tropical worker'

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[14] Tilley, H. (2004)

[15] Tilley, H. (2004). p.25

[16] Spitzer, L. (1968). "The Mosquito and Segregation in Sierra Leone." Canadian Journal of African Studies **2**(1): 49-61. Curtin, P. (1985). "Medical Knowledge and Urban Planning in Tropical Africa" The American Historical Review **90**(3): 594-613. Cell, J. W. (1986). "Anglo-Indian Medical Theory and the Origins of Segregation in West Africa" The American Historical Review **91**(2): 307-335., Eckart, W. U. (1998). "Malaria and colonialism in the German colonies New Guinea and the Cameroons. Research, control, thoughts of eradication " Parassitologia **40**(1-2): 83-90. Goerg, O. (1998). "From Hill Station (Freetown) to Downtown Conakry (First Ward): Comapring French and British Approaches to Segregation in Colonial Cities at the Begining of the Twentieth Century " Canadian Journal of African Studies **32**(1): 1-31.

[17] Spitzer, L. (1968)

[18] Spitzer, L. (1968)

[19] Anderson, W. (1992). ""Where Every Prospect Pleases and Only Man is Vile": Laboratory Medicine as Colonial Discourse " Critical Enquiry **18**(3): 506-526., Packard, R. (1993). "The Invention of the 'Tropical Worker': Medical Research and the Quest for Central African Labor on the South African Gold Mines, 1903-36." The Journal of African History **34**(2): 271-292., Beuschel, G. C. (2001). Shutting Africans Away: Lunacy, Race and Social Order in Colonial Kenya, 1910-1963 History London, School of Oriental and African Studies, Livingstone, J. (2001). "Physical Fitness and Economic Opportunity in the Bechuanaland Protectorate in the 1930s and 1940s" Journal of Southern

meant that attention was taken away from failures to effect environmental reforms in the mines, despite unusually high mortality rates. Packard argued that, through constructing the workers as 'tropical', the mining industry '*shifted from making excuses for the high mortality among their workers to claiming the ability to prevent it.'* [20] Livingstone explored the practice of mine medical examinations in the Bechuanaland Protectorate in the 1930s and the 1940s in order to show the way in which these practices became a key area for debate and '*ultimately, control over local understandings of physiology and its encoded values'*.[21] Vaughan looked at the way in which biomedicine in colonial East Africa contributed to the construction of the 'sick African', which needed the intervention of western biomedicine.[22]

We can see from this summary that historians of science asking questions of colonial power relations in East Africa have tended to focus on dominant institutions, and the power exerted by these institutions. This approach is part of a general trend in the history of colonialism, looking at what colonialists *did*. While valuable, these approaches lose the other stories of the history of science in Africa, which do not quite fit into the colonial, imperial narrative; the more nuanced stories.

2.4. Medical Histories Drawing from African studies

Reading more broadly than the history of medicine literature, it became apparent that certain literature from African studies has been helpful for taking a more nuanced, place-centred approach. In African studies there has been a valuable emphasis on 'lived life' as a way of revealing the full complexity of imperial stories, showing that there is no master narrative of colonialism in the period following political independence. These historians have given attention to everyday life, land resettlement and labour.[23] This is in contrast to following the narratives of the

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African Studies **27**(4): 793-811., Campbell, C. (2007). Race and empire: eugenics in colonial Kenya Manchester, Manchester University Press. For similar approaches in India see Bynum, W. F. (1998). ""Reasons for contentment": malaria in India, 1900-1920." Parassitologia **40**(1-2): 19-27.

[20] Packard, R. (1993). "The Invention of the 'Tropical Worker': Medical Research and the Quest for Central African Labour on the South African Gold Mines, 1903-36." The Journal of African History **34**(2): 271-292.

[21] Livingstone, J. (2001). "Physical Fitness and Economic Opportunity in the Bechuanaland Protectorate in the 1930s and 1940s" Journal of Southern African Studies **27**(4): 793-811.

[22] Vaughan, M. (1991). Curing their Ills: Colonial Power and African Illness. Oxford, Polity Press

[23] Crush, J. (1985). "Landlords, Tenants and Colonial Social Engineers: The Farm Labour Question in Early Colonial Swaziland." Journal of Southern African Studies **11**(2): 235-257., Davis, B. and D. Wolfgang (1987). "Survival and

colonial administration and the central point of focus. In doing so, what becomes emphasised is the many different interactions between different people in the context of colonialism. For example, Beinart shows, through following struggles in the labour market in South Africa, how this market was also shaped through a process of struggle within and by rural communities as opposed to a simple story of domination through colonialism. [24] This approach could be applied to medical research by looking at how the process of research was shaped by rural communities rather than the dominance of colonial officers.

There have been limited approaches to looking at the struggles which occurred during the colonial period with regards to medical research, as opposed to the dominance of colonial medicine. The struggles here are referring to the contestations and interplay between multiple understandings of health and illness between medical officers and local people, as opposed to the dominance of one over the other. One way of doing this has been through histories that offer longer chronologies of disease than the colonial period, focussing also on the pre-colonial period.[25] This is in contrast to the accounts described above, which solely follow the introduction of Western biomedical knowledge. As a result, these studies have emphasised the particularity of diseases and how they unfolded in particular places.

Through longer chronologies, Historians have sometimes highlighted the iatrogenic effect of colonial medical campaigns. Iatrogenesis is the phenomenon whereby medical interventions cause unintended further ill health. For example, Dawson

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Accumulation in Gutu: Class Formation and the Rise of the State in Colonial Zimbabwe, 1900-1939 " Journal of Southern African Studies **14**(1): 64-98., (Doward 1987), Beinart, W. (1991)."Transkeian Migrant Workers and Youth Labour on the Natal Sugar Estates 1918-1948 " The Journal of African History **32**(1): 41-63., Chimhowu, A. O. (2002)"Extending the Grain Basket to the Margins: Spontaneous Land Resettlement and Changing Livelihoods in the Hurungwe District, Zimbabwe "Journal of Southern African Studies **28**(3).

[24] Beinart, W. (1991)

[25] Dias, J. R. (1981). "Famine and Disease in the History of Angola c. 1830-1930." The Journal of African History **22**(3): 349-378., Koponen, J. (1988). "War, Famine, and Pestilence in Late Precolonial Tanzania: A Case for a Heightened Mortality " The International Journal of African Historical Studies **21**(4): 637-676., Doyle, S. (2000)."Population Decline and Delayed Recovery in Bunyoro, 1860-1960." The Journal of African History **41**(3): 429-458., Hartwig, G. W. (1978). Social Consequences of Epidemic Diseases: The Nineteenth Century in Eastern Africa Disease in African History G. W. Hartwig and K. D. Patterson. Durham Duke University Press, Dawson, M. H. (1987). "The 1920s Anti-Yaws Campaigns and Colonial Medical Policy in Kenya." The International Journal of African Historical Studies **20**(3): 417-435., Ndege, G. O. (1996). Disease and socioeconomic change: the politics of colonial health care in Western Kenya 1895 - 1939 History Morgantown West Virginia University

looked at the 1920s Yaws campaign as a case study for exploring the way in which the English colonial regime dealt with rural populations, and also crucially the reactions from rural populations.[26] Yaws was a highly contagious non-venereal disease, which has symptoms such as skin sores. Exploring the interactions between people inflicted with the disease and colonial medicine Dawson explained that while the campaign was significant in reducing the number of Yaws cases, it also reduced the African population's immunity to infection with venereal syphilis; arguing that while the campaign ended in short-term success, it resulted in other unforeseen and unintended long-term problems. Dawson wrote about these legacies both as memories, held within communities, and epidemiologically, through disease patterns.

Drawing from the field of STS, other works have explored the *practice* of colonial science 'in the field'.[27] These studies have raised various valuable points with regards to the process of colonial science. In line with this approach, richer histories of regions have illustrated the particularity of disease and struggles with interventions in places. For example, Malaowany found that what emerges from histories of science in sub-Saharan Africa, when looking at the science in practice, is '*the differences that existed in the field in the application of disease control strategies, colony to colony, country to country, region to region. More importantly these differences existed because of the varieties of local responses to medical/scientific surveys, programmes, campaigns and strategies.'*[28] In doing so, Historians have

[26] Dawson, M. H. (1987)

[27] MacKenzie, J. M. (1990). Experts and amateurs: tsetse, nagana and sleeping sickness in East and Central Africa. Imperialism in the natural world J. M. MacKenzie. Machester, University of Manchester Press**,** Hoppe, K. A. (1997). "Lords of the Fly: Colonial Visions and Revisions of African Sleeping-Sickness Environments on Ugandan Lake Victoria, 1906-1961." Africa: Journal of the International African Institute **67**(1): 86-105. Russell, G. K. (1998). Malaria Prevention Trials in Sub-Saharan Africa. History of Medicine London, University College London. **BSc,** Conte, C. (1999). "Colonial Science and Ecological Change: Tanzania's Mlalo Basin, 1888-1946." Environmental History **4**(2): 220-244.**,** Grischow, J. D. (2006). "K. R. S. Morris and Tsetse Eradication in the Gold Coast, 1928-51." Journal of International African Institute **76**(3): 481-401. For examples from outside of Africa, see Stuart, A. (2006). "We Are All Hybrid Here: The Rockefeller Foundation, Sylvester Lambert, and Health Work in the Colonial South Pacific " Health and History **8**(1): 56-79. .**,** Stapleton, D. H. (2005) "A Lost Chapter in the Early History of DDT: The Development of Anti-Typhus Technologies by the Rockefeller Foundation's Louse Laboratory, 1942-1944." Technology and Culture **46**(3): 513-540

[28] Malowany, M. (2000). "Unfinished Agendas: Writing the history of medicine of Sub-Saharan Africa " African Affairs **99**: 325-349.

highlighted the varied engagements in science in colonial Africa. Palladino and Worboys called for an emphasis on 'multiple engagements' in understanding the malleable nature of western science in Africa, arguing that '*to understand the interactions between science and empire we must pay greater attention to the historical and cultural heritage of both imperialists and the indigenes, and to how the latter first interacted with and then reshaped various forms of knowledge.'*[29] This literature looking at interactions and processes of colonial science in Africa is a helpful reminder to contextualise the local situation in which the scientists are working, as well as thinking about the broader global context of malaria research. However, this literature still looks at the interaction between the colonial science and people who were from the specific local contexts as recipients of the science, as opposed to looking at people living in the local context as also putting intellectual input into the science.

2.5. Histories of Malaria and Land

There have been a few histories of malaria in Africa which tie in understandings of the disease with a deeper broader understanding of the interplay with the local context. Packard complicated generally accepted notions of the relationship between malaria and development by exploring the multiple relations of different groups with malaria techniques in Transvaal Lowveld, 1890-1960.[30] Packard tied together stories of malaria over time with agricultural development and political economies. By doing this, Packard showed how malaria and malaria control was mediated by race and class. For example, Packard showed how African farmers benefited from the presence of malaria, as highly endemic areas were abandoned by colonial landlords, and therefore could be used by local farmers. Packard also moves his analysis beyond race lines, bringing in class to stories of malaria. Packard showed that at particular points in time it was poorer white farmers who especially suffered from the affects of malaria, while with the achievements of malaria control, it was capitalist white farmers who benefitted. Packard sensitively manages to show how

[29] Palladino, P. and M. Worboys (1993). "Science and Imperialism" Isis **84**(1): 91-102.

[30] Packard, R. (2001). "'Malaria Blocks Development' Revisited: the Role of Disease in the History of Agricultural Development in the Eastern and Northern Transvaal Lowveld, 1890-1960." Journal of Southern African Studies **27**(3): 591-612.

particular, specific, detailed histories of malaria control contrast with generally accepted assumptions about the effects that public health measures can have on economic and social development.[31]

McGregor and Ranger explored the various narratives of malaria in Matabeland, Zimbabwe, 1945-1996.[32] In doing so, the authors highlighted the complexity of the notion of 'progress' with regards to approaches to malaria as packaged by institutions such as the World Health Organization (WHO). The authors show how it became impossible to '*postulate clear dichotomies between 'scientific' and 'indegenous', between official and private, between 'tradition' and 'modernity'.* In light of this, the authors argued that:

> *Local debates about the encounter with endemic and epidemic malaria are about matters much more then matters medical, narrowly defined; their significance is greater than whether or not they encourage a timely visit to the clinic. They provide diverse and fascinating moral, political and ecological commentary through their understandings of bodily health as part of a broad set of relationships between individuals, community, state and the land.*[33]

These historians have tied their historical analysis to the places in which malaria occurs, bringing in issues of class, race and community. Even though these are closely tied to places, as Schumaker pointed out, the majority of malaria histories have focused on doctors' and scientists' accounts, meaning that it is largely the medical responses to diseases that we have recorded.[34] This leads Schumaker to question '*how can participatory practices succeed if the local people's ideas about malaria and the history of their own encounters with the disease are still largely unknown?*'[35]

2.6. The 'Africanisation' of Science

'Africanisation' is a term referring to the practical aspect of Africans taking up positions in public institutions in the transition to independence. It is also a term used

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[31] Packard, R. (2001).

[32] McGregor, J. and T. Ranger (2000). "Displacement and Disease: Epidemics and Ideas about Malaria in Matabeleland, Zimbabwe, 1945-1996." Past and Present (167): 203-237.

[33] McGregor, J. and T. Ranger (2000). P.237

[34] Schumaker, L. (2000). Malaria Medicine in the Twentieth Century R. Cooter and J. Pickstone. Amsterdam, Harwood Academic Publishers

[35] Schumaker, L. (2000).

more philosophically in order to describe notions of what it means to be African and the role of this in the production of knowledge. With the increasing 'Africanisation' of science in the period leading up to independence, for many people involved in the practice of malaria research, especially during the period leading up to independence and just after, the location was not 'the field' but theirs and their ancestral homes, making this a particularly interesting period to look at. [36] In the literature there have been some attempts by historians to look into the way in which local knowledge was (or was not) incorporated into research. Beinart, referring to the way in which local knowledge was often ignored, pointed out that while colonial officials overlooked local methods of coping with the environment, in fact modern ecological science sometimes bears greater resemblance to African rural thinking than '*technocratic ideas of the post-Second World War*'.[37] However, this has been done in a different way to how it is approached in this thesis. Previously, in the literature, the role of local people in scientific research in this literature has largely been characterised as 'other' knowledge.[38] This is not to say that it has been approached in a derogatory form, for Beinart is pointing out the value of it which was often overlooked. However, in the literature there is often a contrast between scientific versus traditional or 'other' knowledge, as opposed to looking at the fluidity between the two. A way of doing this is through following the way in which biomedically-trained Africans with in-depth local knowledge navigated these contexts.

As yet, there has been very little written on this period in which African scientists gained important positions in scientific institutions. There has been some theoretically informed literature that bemoans the fact that this decolonisation of science did not truly happen. Ombongi wrote about the way in which this time of

[36] Haddow, A. J. (1980). Research Institutions Health in Tropcial Africa during Colonial Times D. Bradley, K. Kirkwood and E. E. Sabben-Clare. Oxford Oxford University Press.

[37] Beinart, W. (1989). "Introduction: The Politics of Colonial Conservation " Journal of Southern African Studies **15**(2): 143-162.

[38] Beinart, W. (1989). Waller, R. and K. Homewood (1997). Elders and experts: contesting veterinary knowledge in a pastoral community Western medicine as contested knowledge A. Cunningham and B. Andrews. Machester, Manchester University Press 69-93., Waller, R. (2004). "'Clean' and 'Dirty': Cattle Disease and Control Policy in Colonial Kenya, 1900-40." Journal of African History **45**(1): 45-80.

potential for Kenyan science was short-lived.[39] Preibe's work on malaria research is a rare example of using theories of scientific knowledge to consider malaria research in contemporary Africa and what the concept of 'Africanisation' means.[40] Preibe explored what the 'Africanisation' of malaria science meant in the 1990s. While a different approach, her work is worth considering here and of great relevance to this thesis. Priebe argues that African scientists have been marginalised in the post-colonial period. She makes an important argument as to why this is a fundamental problem for the science which is produced. Priebe argues that this has epistemological implications on the science that is produced. This is because it is the scientists with more everyday experiences of malaria who are marginalised in favour of '*European laboratory based science'* writing about '*How science knows malaria has had consequences for what it knows about malaria.'*[41] The authors conclude by calling for greater attention to the theoretical meaning of the 'Africanisation' of medical knowledge production.

While not particularly explored in relation to scientists, the process of 'Africanisation' has been explored further in relation to other professions such as doctors, politicians, and artists. Illiffe charted the social biography of East African doctors from the 1870s to the 1990s, following their interests and education over time. Iliffe found that amongst this set there was a strong group consciousness. He argued that while in European contexts the professionalisation of groups such as doctors has paralleled a strong state, what is interesting about this context is that it is the weak state that made for a stronger group consciousness of black East African doctors.[42] However this has not been explored in Kenya in terms of scientists. These questions of professional performance and nationhood have been explored historically with regards to politics, theatre, education and contemporary art in Kenya.[43]

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[39] Ombongi, K. (2011). The Historical Interface between the State and Medical Science in Africa: Kenya's case. Evidence, Ethos and Experiment: The Anthropology of Medical Research in Africa P. W. Geissler and C. Molyneux. Oxford Berghahn Publishers.

[40] Priebe, G. and F. Ntoumi (2010). "Africanizing scientific knowledge: the Multilateral Initiative on Malaria as a model?"Malaria Journal **9**(Supple 3) pp. 1-4.

[41] Priebe, G. and F. Ntoumi (2010). P4.

[42]Iliffe, J. (1998). East African Doctors: A History of the Modern Profession Cambridge, Cambridge University Press.

[43] For examples see Thiongo, N. W. (1986). Decolonizing the Mind: The Politics of Language in African Literature Nairobi, Heinemann Kenya, Kurtz, R. J. (1998). Urban Obsessions, Urban Fears: The Postcolonial Kenyan Novel

2.7 Post-colonial Historiography of Science in Africa

In reading the literature, it becomes apparent that the post-colonial literature on science in Africa tends to follow the theme of critical studies of colonial science and medicine. This is in the sense of where the attention is given and agency placed. If the period of focus is post-colonial, historians have pointed out the way in which institutes of the former empire continue to exert power and influence over African citizens or institutes.[44] For example, Moulin followed the development of the French Pasteur Institutes in France and abroad. Moulin argued that it was the way in which the Institutes were imbued with a certain type of *"French chauvinism"* making Pasteurism more than a by-product of nineteenth century expansion, which led to the network to successfully outlive the toll of colonialism.[45] Moulin drew attention to the way in which the Pasterians "*displayed a remarkable intellectual mobility; they shifted their targets according to the context"*.[46] She described this as a form of "*elastic ideology* [that] *animated the network of overseas Pasteur Institutes"*.[47] Moulin sees this as an explanation of why, following colonialism, not only did many of the Pasteur Institutes remain, but also new ones appeared, understanding how "*scientific imperialism survived without empire".*[48] While interesting and valuable, we do not get a sense from work such as Moulin's, of the agency or aspirations of African scientists or institutions without empire. Similarly, Power and Sidaway traced the way in which colonial and tropical geography as practiced following World War II

African World Press, Outa, G. O. (2009). Performing Power: Ethnic Citizenship, Popular Theatre and the Contest of Nationhood in Modern Kenya BookSurge Publishing

[44]Home, R. W. and S. G. Khohlstedt (1991). Introduction International Science and National Scientific Identity: Australia between Britain and America R. W. Home and S. G. Kohlstedt. Dordrecht Kluwer Academic Publishers, Moulin, A. M. (1992). Patriachal Science: The Networks of the Overseas Pasteur Institutes Science and Empires: Historical Studies about Scientific Development and European Expansion P. Petitjean, C. Jami and A. M. Moulin. Dordrecht Kluwer Academic Publishers, Merson, J. (2000). "Bio-Prospecting or Bio-Piracy: Intellectual Property Rights and Biodiversity in a Colonial and Postcolonial Context "Osiris **15**: 282-296, Home, R. W. (2002)"The Royal Society and the Empire: The Colonial and Commonwealth Fellowship Part 1. 1731-1847." Notes and Records of the Royal Society of London **56**(3): 307-332, Home, R. W. (2003). "The Royal Society and the Empire: The Colonial and Commonwealth Fellowship Part 2. After 1847." Notes and Records of the Royal Society of London **57**(1): 47-84.

[45]Moulin, A. M. (1992). Patriarchal Science: The Networks of the Overseas Pasteur Institutes Science and Empires: Historical Studies about Scientific Development and European Expansion P. Petitjean, C. Jami and A. M. Moulin. Dordrecht Kluwer Academic Publishers

[46] Moulin, (1992) p.308 Ibid.

[47]Moulin (1992) p.308 Ibid.

[48]Moulin (1992) p.318 Ibid.

became repackaged as 'development geography' by the 1970s.[49] So again, the attention is focused on the repackaging, or continuation of former colonial powers, as the focal point of analysis. This approach was also taken by the historian Bonneuil when characterising science in Africa in the 1970s. Bonneuil argues that science and technology "*shaped in colonial contexts, remained major factors of the colonial legacy".* Bonneuil explains the developments of science in Africa from the vantage point of European connections and influence.[50]

I argue that, while telling important stories for exposing power differentials, these historians of post-colonial science in Africa have used a grand narrative approach to Africa and a top-down approach to history. In contrast to looking at Kenya in the global post-colonial context are studies of industry such as horticultural and the fresh fruit industry, where the networks of production are explored and followed as opposed to looking for the dominance of one over the other from the outset.[51]

2.8. Contributions from Studies of Science and Political Independence in other Continents

In contrast to the late colonial and post-colonial period of historiography of medical research in Africa, literature coming from other continents has taken a different approach. Historians have found nationhood integral to scientific approaches for scientists in post-colonial contexts, although one has to venture away from Africa to other post-colonial contexts such as India and South America to read about this. In doing so, historians have offered more nuanced narratives of the complex relationship of place and science at points of political independence.

Chakrabarti details debates surrounding the setting up of a central institute of research in India in the 1920s and outlines the tensions between nationalist hopes for this to be a national university, and British scientists' hopes for this to be in

[49] Power, M. and J. D. Sidaway (2004). "The Degeneration of Tropical Geography" Annals of the Association of American Geographers **94**(3): 585-601.

[50] Bonneuil, C. (2000). "Development as Experiment: Science and State Building in Late Colonial and Postcolonial Africa, 1930-1970." Osiris **15**: 258-281.

[51] Dolan, C. and J. Humphrey (2010). "Governance and Trade in Fresh Vegetables: The Impact of UK Supermarkets on the African Horticulture Industry." Journal of Development Studies **37**(2): 147-176.

isolation.[52] For Chakrabarti, it was in the 1920s in India that science, medicine and education became '*contested territory*' with the rise of nationalism. Chakrabarti argues that for Indian scientists, "*research was a moral and fundamental quest, part of their search for nationhood and identity in the modern world"*[53] Interestingly, a national research institute was never built, leaving way for a Rockefeller Foundation funded project. Overall Chakrabarti's paper shows how "*the identity of nationhood and its choices of scientific models and infrastructure were intrinsically linked."*[54] Chakrabarti highlights the value of looking at the debates that went on in newly forming institutions alongside developing nationalism, even if these institutes did not materialise. Chakrabarti also highlights the tensions between nationalism and growing internationalism in the sciences '*While nationalist ideology questioned the motives, aesthetics, and ethics of imperial research, international health initiatives and funding, from the interwar era, had fast changed the norms of colonial health and research."*[55] Overall Chakrabarti's paper shows how '*the Identity of nationhood and its choices of scientific models and infrastructure were intrinsically linked.'*

Post-colonial institutions of science have also been interrogated in South America. Arboleda explored scientific activity in Columbia on the eve of independence, exploring "*the emergence, among the intellectuals with nationalistic views, of a realistic program for specialised training and research in their countries".*[56] Arboleda focuses in-depth on the correspondence and writing of one specific scientist in order to explore the link between '*his national pride and his will to know*' on the eve of independence. [57] Arboleda suggests that this is an example of the realistic endeavour of a scientist on the periphery, far away from the scientific centres, to put forward projects towards the '*institutionalisation of research and training of specialists adapted to local circumstances'.*[58] The common thread from these histories is not

[52]Chakrabarti, P. (2009). "'Signs of the Times' Medicine and Nationhood in British India" Osiris **24**: 188-211.
[53]Chakrabarti, P. (2009).
[54]Chakrabarti, P. (2009). p.16.
[55] Chakrabarti, P. (2009).
[56]Arboleda, L. C. (1992). Science and nationalism in New Granada on the eve of the revolution of independence Science and Empires: Historical Studies about Scientific Development and European Expansion P. Petitjean, C. Jami and A. M. Moulin, Dordrecht, Kluwer Academic Publishers
[57]Arboleda, L. C. (1992) ibid
[58]Arboleda, L. C. (1992) ibid

only the legacies of colonialism, but the changing dynamics of research and collaboration at the point of independence with interests of other centres of science such as the US and Japan. In addition to this are the complexities of contributing to the international scientific community, while producing locally relevant science. This draws parallels with Chakrabarti's descriptions of the medical research institute in India.

2.9. Historical Ethnographies of Institutions in Africa

While there have not been similar studies on scientific institutions in Africa, there have been studies on other sites of knowledge production. Historians of Africa have conducted nuanced studies of the post-colonial period through the lens of institutions.[59] Examples are drawn from African studies and environmental history, which also involves stories of the land, alongside that of the building, further contextualising the institute.

Sicherman wrote about the building of an African Department of History at Makarere University in 1950-1972.[60] This is of particular relevance because it charts the period leading up to the collapse of the EAC, which strongly impacted the University of Makarere.[61] Sicherman approaches the history department in her analysis with the interesting question of "*what was an 'African' university?"* at this time. [62] Sicherman focuses on the period leading up to 'Africanisation' when the expatriate staff were preparing for this, and approaches the problematic that very few Africans were qualified to university level. Rather than looking at the legacy of colonialism, Sicherman notes the impact of the Cold War, and how this led to millions coming from American universities towards staff development.

[59]Isaacman, A. and C. Sneddon (2000). "Toward a Social and Evironmental History of the Building of Cahora Bassa Dam" Journal of Southern African Studies **26**(4): 597-632, Sicherman, C. (2003). "Building an African Department of History at Makerere 1950-1972." History in Africa **30**: 253-282, Isaacman, A. (2005). "Displaced People, Displaced Energy, and Displaced Memories: The Case of Cahora Bassa, 1970-2004." The International Journal of African Historical Studies **38**(2): 201-238, Morrow, S. and K. Gxabalashe (2009). "The Records of the University of Fort Hare" History in Africa **27**: 481-497.

[60]Sicherman, C. (2003).

[61] Following independence, the University of Makarere cut ties with the University of London and became the University of East Africa (UEA), however this disbanded in 1970 into national universities.

[62]Sicherman, C. (2003). p.254.

Another example comes from Morrow and Gxabalashe who wrote about the history of For Hare University based in South Africa. They interlace a history of the university, through its various transitions, paying great attention to the implications of the sources available in order to study the history of the institute. They outline the value of the sources as windows to further African studies, such as a deeper understanding of the development of a black middle class in South Africa.[63] What both of these studies bring attention to is the way in which historians need to dig deeper into questions such as class, when using notions of 'Africanisation' in the late colonial/early post-colonial period.

These examples from Sicherman and Isaacman highlight the value of using an institution as a narrative for understanding intellectual ideas and location, as well as the importance of listening closely to the *originating ideals* from multiple parties, even if these plans did not materialise. There are examples from environmental histories in which institutional biographies have been firmly embedded into their locations, as a way of exploring silenced and sometimes forgotten plans. In staying anchored in the biography of the institution these historians have managed to avoid overemphasising the colonial and post-colonial connections in order to be open to other connections. In doing so, through rich emplacement of the institutions within the specific local contexts, historians of Africa have complicated the 'Africanisation' period.

2.10 Ethnographies of Scientific Institutes in Africa

While not historical, there are some ethnographies of scientific research institutes at transnational research sites. There have been sociological and anthropological studies of transnational research collaborations in The Gambia, Kenya, South Africa, Thailand, Bangladesh and India [64] Of particular relevance to this thesis are

[63] Morrow, S. and K. Gxabalashe (2009).

[64] Geissler, W., et al. (2008). "'He is now like my brother, I can even give him some blood' - relational ethics and material exchanges in a malaria vaccine 'trial community' in The Gambia " Social Science and Medicine **67**(5): 696-707., Jentsch, B. and C. Pilley (2003)."Research relationships between the South and the North: Cinderella and the ugly sisters?"Soc Sci Med **57**(10): 1957-1967. Lachenal, G. (2010). The Intimate Rules of French Cooperation: Morality, Race and the Postcolonial Division of Scientific Work at the Pasteur Institute of Cameroon Studying Trial Communities: the Ethnography and History of Medical Research in Africa P. W. Geissler and C. Molyneux, Oxford Berghahn Publishers, Geissler, W. and R. Pool (2006). "Popular concerns about medical research projects in sub-Saharan Africa - a critical voice in debates about medical research ethics" Tropical Medicine and International

anthropological studies of scientific research institutes in Africa.[65] These studies focus on the complexities of doing transnational science from the perspective of particular places. For example, Geissler and colleagues in their study of a UK based Medical Research Council (MRC) sponsored trial in The Gambia found that there was a contrast between scientists' and volunteers' understandings of time. '*The research project was limited to the short-term: the time needed to answer a scientific question. By contrast, villagers and field workers inserted the trial into the series of MRC interventions that related to their long-term health needs and envisaged continuous relations.*'[66] These studies found that the inequalities would be both reinforced and expressed in a number of ways and overall the case studies raise concerns over the unequal dynamics of international collaboration.[67]

The approach of this thesis differs in two main ways from the above work described in these ethnographies of scientific institutes. Firstly, the studies outlined above do not consider the epistemology of the science produced. Instead the focus is on the practice of research and notions of 'justice' in the process of research rather than thinking about the way in which the locality of the research affects the outputs of the research. Being grounded in the sociology of scientific knowledge, in contrast to the above studies, this thesis considers what knowledge is produced; what are the ontological objects of interest by the scientists in these specific locations. Secondly, these ethnographies are not historically grounded within the specific context. Focusing on one institution in-depth makes visible the complex amalgamation of career aspirations, architecture, collaborations, technologies and epistemologies of disease as encapsulated in the processes of medical research.

Health **11**(7): 975-982.**,** Fairhead, J., et al. (2006). "Where techno-science meets poverty: Medical research and teh economy of blood in The Gambia, West Africa." Social Science and Medicine **63**: 1109-1120.

[65] Fairhead, J., et al. (2006). Geissler, W. and R. Pool (2006). "Popular concerns about medical research projects in sub-Saharan Africa - a critical voice in debates about medical research ethics" Lachenal, G. (2010). The Intimate Rules of French Cooperation: Morality, Race and the Postcolonial Division of Scientific Work at the Pasteur Institute of Cameroon Studying Trial Communities: the Ethnography and History of Medical Research in Africa P. W. Geissler and C. Molyneux. Oxford Berghahn Publishers**,** Geissler, W., et al. (2008). "'He is now like my brother, I can even give him some blood' - relational ethics and material exchanges in a malaria vaccine 'trial community' in The Gambia " Social Science and Medicine **67**(5): 696-707.

[66] Geissler, W., et al. (2008).

[67] Geissler, W., et al. (2008). Jentsch, B. and C. Pilley (2003), Lachenal, G. (2010). Geissler, W. and R. Pool (2006). Fairhead, J., et al. (2006).

2.11. SUMMARY

In this literature review the various approaches taken by historians and anthropologists are considered. The way that they are and are not helpful for further researching the plans of Kenyan scientists in the 1970s is outlined. Broadly this has been a historiography of medical research in Africa; although it is also a critique of two overarching ways in which the history of medical research in Africa has been written about. Firstly, the celebratory accounts of tropical medicine, which tend to take a Whiggish approach to history and be written by those involved in the research (such as biographies). Secondly, the critical literature which has tended to focus on what colonialists *did.* When the time period extends to the post-colonial this approach continues, where the focus becomes on what former colonial institutions still do, or what neoliberal institutions have done in Africa.

In contrast to the above histories, I did not want to write another history about what had been *done* to Africa. Choosing a country where political independence from the British had happened, I wanted to consider what independence meant for the scientists involved in the planning of science after political independence. What kind of questions did they want to ask? How did the science planned relate to politics? In what ways did the scientists consider that they would collaborate within the broader context of global biomedical research? So while being informed by these critical approaches, this thesis aims to look at the stories, collaborations and agency of African scientists, as opposed to what colonialists *did*, or the legacy of colonialism.

This thesis is influenced by aspects of African studies that puts emphasis on local intellectual debates. In addition, this thesis is influenced by post-colonial historiographies of science in South America and India, which focus on the plans of scientists just before and soon after political independence. Also this thesis is influenced by STS literature and environmental histories, which look at the relationship between place and the epistemology of science. This thesis will attempt to find the hidden, perhaps complicated, narratives of an African institution, with regards to science. With greater emphasis on micro-studies of science in particular settings we can see that science during this period was illustrative of multiple continuities and also discontinuities of the varied political, economic and social

terrains. Largely, it is staying grounded in the perspectives and hopes of the scientists, taken by Chakrabarti and Arboleda, which this thesis is influenced by.

CHAPTER 3. METHODOLOGICAL APPROACH

Having described the broad theoretical positioning of this thesis and how this relates to the history of medical research in Kenya, this next chapter ties these ideas in with the methodological approach of the thesis. It first describes the theoretical literature that informed the approach, it then describes the practical aspects of collecting the sources and conducting the interviews. In the final section it describes how I read and analysed the sources. I reflect continually through the chapter on the choices I made and the implications these had on the research. This thesis is based on various historical research methods, including oral history, documentary analysis and the analysis of visual materials such as photographs and maps.

When it comes to the practical aspects of the methods, this chapter is written in the chronological order of the research process, beginning with the first trip I took to Kenya at the very early stage of the research process. Research for this thesis involved three trips to Kenya. The first, for two months in March and April 2009 was largely spent collecting documents in Kisumu. The second trip in December 2009 was spent collecting documents at the National Archives in Nairobi. The third trip, of six months between April and November 2010, was spent in Kisumu (and occasionally Nairobi) collecting documents, conducting oral history interviews and taking photographs. The chapter begins next with a discussion of the way in which the theoretical literature informed my methodological choices.

3.1. THE SOCIAL CONTEXT OF SCIENCE AND MEDICAL RESEARCH

This section introduces the theoretical literature that influenced my methodological decisions. The theoretical perspectives are described here in order to show how they informed the way that sources were collected, read, analysed and interpreted, and importantly how it was decided what would be considered a source for this research. With regards to the writing of history, I am influenced by postmodern historians, such as Keith Jenkins, Hayden White and Reinhart Koselleck, who highlight the value of theory and reflexivity in history.[68] It is in this sense that I see the writing of history as

[68] White, V. H. (2002). Foreword. The Practice of Conceptual History: Timing History, Spacing Concepts R. Kosselleck. USA, Stanford University Press. Pp. xiii-xiv, Jenkins, K. (2007), Re-thinking History, Routledge.

a dialogue, constantly open to new interpretations. Yet with the formation of narratives we are able to make visible certain power dynamics that might otherwise not be considered. This chapter goes into detail with regards to the methodological choices made for this thesis.

This thesis explores the history of medical research in Kenya and the focus is on institutionalised forms of biomedical knowledge. This is knowledge of nature and the world that has been systematically collected and entered into the formal medical institutions practicing research, adhering to western biomedical knowledge. This is similar to the approach taken to the history of science by Helen Tilley in Africa.[69] The term 'research' here is used to refer to the systematic collection of information for the purpose of producing medical knowledge. I am aware that this limits the scope of what could be included into a history of medical research in Kenya. There is great value to debates that raise awareness that, as historians of science, we are too narrow in our focus of what we incorporate into our narratives of scientific knowledge.[70] I agree with these debates, however for the purposes of aims of this thesis I chose to focus on knowledge made and collected by biomedically trained medical researchers in Kenya.

When writing about the history of the science presented in the thesis I have been influenced and informed by the sociology of scientific knowledge (SSK). The sociology of scientific knowledge places emphasis on the practices involved in the production of scientific knowledge and 'fact making' in order to place the process within specific social contexts.[71] The sociology of scientific knowledge avoids the 'sociology of error' approach to the history of science. [72] The sociology of error approach is when historians choose points of 'crisis' in order to investigate the workings of science, instead of seeing the mundane practices of science and valuable objects of study. This is done by paying equal attention to both science that has since been considered, with the hindsight of time, to be incorrect, and science that has gone on to be

[69] Tilley, H. (2011). Africa as a Living Laboratory: Empire, Development and the Problem of Scientific Knowledge, 1870-1950 Chicago, University of Chicago Press

[70] This has been approached by historians such as Sivasundaram, S. (2010). "Sciences and the Global: On Methods, Questions, and Theory " Isis **101**(1).

[71] LATOUR, B. & WOOLGAR, S. (1986)

[72] BLOOR, D. (1976) Knowledge and Social Imagery Chicago, University of Chicago Press.

considered to be 'right'. In a context such as science in Kenya, with many power dynamics involved in international collaboration, this is a particularly valuable approach, where there are many interpretations as to the 'right' kind of science to be done. In other words, it is the practice of making the science rather than an evaluation of the science, in which the malaria work is approached that is considered the focus of this historical narrative.[73]

What is meant by 'specific social contexts' is that attention is given to aspects of the process of science, such as the people who conceive of the ideas, the buildings in which the science is made, the city in which this building exists, the national context of this city, and then the global context. In this way science is considered as part of the social world. This in contrast to approaches that look at science in society; science is considered in this thesis as part of society and therefore inherently social.[74] Therefore, in this thesis science is approached as a social practice and attention is given to the conditions – social and material - surrounding the production of knowledge.

3.2. KNOWLEDGE PRODUCTION AND MALARIA

The focus of this thesis is specifically on one disease: malaria. As a major public health burden in Kenya, malaria has been the focus of shifting scientific practices, ideas, policies and interventions, locally and globally.[75] Malaria is particularly interesting for exploring the role of science over time because of the longer history of the disease as compared, for example, to HIV/AIDS. Malaria is an interesting entry point for considering the many connections and collaborations involved in science. Histories of the disease have shown that an awareness of this disease and its impact upon humans has been around for thousands of years.[76] Therefore, I argue that by using malaria as a point of entry, the continuities and discontinuities between the many

[73] Pickering, A. (1995). The Mangle of Practice: Time, Agency and Science USA, University of Chicago Press.
[74] See Andrew Pickering's descriptions of science as 'the mangle'. Pickering, A. (1995).
[75] Heggenhougen, H. K., et al. (2003). The behavioural and social aspects of malaria and its control. Geneva UNDP/World Bank/WHO
[76] Honigsbaum, M. (2001) The Fever Trail: The Hunt for the Cure for Malaria London, Macmillan.

technological, political and social broader structures of knowing, treating and attempting to control the disease are transcended.

Histories of malaria research have shown the way in which the approaches to tackling the disease have reflected broader political philosophies dominant at the time. For example, whether approaches to the disease should favour social or technological dimensions.[77] Packard and Brown show through historical analysis how focusing specifically on mosquitoes in malaria research has allowed people in International Health not to think about the '*thorny problems of poverty and inequalities in the distribution of land and capital resources*'.[78] Therefore, methodologically, what is interesting to trace over time is whose ideas about malaria research become crystallised and whose do not, especially at a crucial time of nation building in Kenya. What interested me was how the imaginations of what a malaria research centre could be and could achieve changed over time. Malaria is also a particularly interesting object of analysis because of the way in which it exposes the fragile relationship between humans and non-human actors.[79] Therefore, following malaria enables an understanding of how history is made by not solely human actors, but also non-human actors such as insects.

3.2.1. HISTORIES OF MALARIA RESEARCH INSTITUTES

There have already been histories of institutions of malaria science, although not in Africa. The methodological relevance of these institutional histories are explained in this section. What these histories have made visible and bring attention to is the heterogeneity of the institutions. For example, they illustrate how over time there have been many debates between and within these institutions, and especially between the scientists, which show the stark contrasts in opinion towards dealing with the scourge of malaria, with the most notorious debates being over whether to control or to eradicate. These analyses of approaches to malaria over time are valuable methodologically as they show the importance of close historical analysis of

[77] Litsios, S. (1996) The Tomorrow of Malaria Pacific Publishing
[78] Packard, R. and P.J. Brown, Rethinking health, development, and malaria: historicizing a cultural model in international health. Medical Anthropology 1997. **17**: p. 181-194.
[79] Beisel, U. (2010) 'Who bites back first?' Malaria control in Ghana and the politics of co- existence. PhD Thesis in Human Geography, The Open University, Great Britain

institutions to avoid simplifications of the positions of individual researchers within institutions. They also help to show that institutions are not homogenous.

However, the range of institutions which have gained attention is limited as the literature has largely focused on the dominant institutions or the policies and activities of a set of particular dominant multi-lateral bodies involved in malaria research, the most popular narrative being to focus on the WHO. [80] What is therefore lost is the lesser known developments in the history of malaria research, for example, the debates that were going on in the smaller institutions, such as KEMRI, on the periphery of the large transnational institutions.

In addition to the previous histories of malaria institutes focusing on the dominant institutions, this literature is also lacking in contextualisation of the relationship between the institutions and the specific places in which they are located. These historians do not locate the institutions in the broader socio-political context of the cities, regions or even countries they are in.[81] Therefore, when thinking about the methodological approach of this thesis, I wanted to make sure that attention was paid to the broader social and political context in which the research institute was based. This has yet to be done with the history of malaria research institutions.

Rather than packaging time and articulating events into a global narrative of malaria research, this thesis focuses methodologically on the specific contexts of this

[80] For example see Harrison, G. (1978). Mosquitoes, Malaria and Man: A History of the Hostilities Since 1880 London, John Murray, Ball, M. (1988). The Attempt to Eradicate Malaria by the World Health Organisation History of Medicine London, University College London. **BSc**, Corbellini, G. (1998). "Acquired immunity against malaria as a tool for the control of the disease: the strategy proposed by the Malaria Commission of the League of Nations in 1933." Parassitologia **40**(1-2): 109-116, Jackson, J. (1998). "Cognition and the Global Malaria Eradication Programme." Parassitologia **40**(1-2): 193-216, Litsos, S. (1998). "Anroldo Gaboaldon's independent path for malaria control and public health in the Tropics: a lost "paradigm" for WHO " Parassitologia **40**(1-2): 231-238, Packard, R. (1998). ""No other logical choice": global malarai erradication and the politics of international health in the post-war era." Parassitologia **40**(1-2): 217-230, Wilkinson, L. (1998). "Conceptual conflict: malaria control and internecine warfare within a London postgraduate school " Parassitologia **40**(1-2): 239-244, Livingstone, D. (1999)."Tropical Climate and Moral Hygiene: The Anatomy of a Victorian Debate " The British Journal for the History of Science **32**(1): 93-110, Honigsbaum, M. (2001). The Fever Trail: The Hunt for the Cure for Malaria London, Macmillan, Mohr, N. (2001). Malaria: evolution of a killer Seattle, Serif and Pixel Press, Banerjee, S. (2005). WHO and Postwar Disease Control Programmes: More than Malaria History of Medicine London, University College London. **MA**, Nishihara, Y. (2005). The Rise and Fall of the WHO Malaria Eradication Campaign History of Medicine London, University College London. **BSc**, Shah, S. (2007). The Fever: How malaria has ruled humankind for 500,000 years New York Sarah Critchton Books .

[81] Gittins, D. (1998). Madness in its Place: Narratives of Severalls Hospital 1913-1997, Routledge

research: What kind of information is collected? How is this decided? What tools are used? What does it entail? And how has this changed over time?

At different times certain approaches to malaria control, such as the use of drugs, surveillance or vaccines, have proven to be more in favour than others.[82] The use of this particular methodological strategy to investigate malaria research enables a detailed consideration of what ideas are able to enter into scientific protocols and which are not, and whether or not this changes over time, in order to reveal what, through the enactment of malaria science, continues to be and stops being hoped for by different people in these moments of change.

3.2.2. History Influenced by anthropological methods

Knowing that this research would entail the collection of a large body of documents, I volunteered in the archives at the London School of Hygiene and Tropical Medicine (LSHTM) in order to gain experience in the basic cataloging of historical documents. These skills proved invaluable in the process of the research, where I digitised a large number of documents. Through being based in Kisumu for a period of time, and getting to know the scientists, I hoped to avoid the aspects which have been criticised such as colonial histories, or histories of empire, where the stories written are through what has been stored in colonial archives.[83] Instead I intended to create a new archive from the documents collected and stories told.[84]

In the next sections of this chapter, the trips made to Kenya are outlined, explaining the steps taken and reflections made surrounding these decisions. The first phase was an early exploratory phase, which lasted from March to December 2009. Two months of this were spent in Kenya and the rest of the time was spent doing early stage analysis back in the UK. The second phase was a six-month period in Kenya between April 2010 and November 2010, which was a deeper level of fieldwork, having done the earlier analysis and drawn out relevant themes. In the next section, the early exploratory phase is described.

[82] Turnbull, D. (1989). "The Push for a Malaria Vaccine." Social Studies of Science **19**(2): 283-300.
[83] Stoler, A. L. (2002)
[84] Comaroff and Comaroff (1992)

3.3. EXPLORATORY PHASE IN KENYA

This first phase of research was spent in Kenya from March to April 2009 and lasted for two months. The majority of this time was spent in Kisumu, Nyanza Province, in the west of the country, where the first national malaria research institute was set up. Malaria research has been a key mandate of the malaria branch of KEMRI since its inception in 1979, and still continued in 2010 with the hopes of a malaria vaccine. In 2009 and historically, the presence of Malaria *p. faciparum* is high in Nyanza Province; inhabitants of the Province are calculated to receive on average over one hundred potentially infected mosquito bites per year.[85]

Initially the criteria for selecting sources for this stage were kept very broad. As outlined in the above description of how the theoretical literature informed the methodological approach, this stage was about determining the boundaries and contours of the research.[86] This means getting a sense of the many different ways in which the research institute was connected to many different places and points in time, and how this changed over time. What I wanted to find through this early phase were the particular traces that would help to make these shifts in time visible. The section below explains how I enabled these themes to emerge through being at the research institute.

As will be described further in Chapter 4, Kenya has a transnational history when it comes to medical research. This means that the narrative of science in this place will take the analyst to many different spaces both in time and place. This meant that at the start of this study it was not initially known where those 'theres' were. Through choosing a site such as Kisumu, with a here, and many 'theres', both in terms of space and time, it was apparent that this project would need an early, exploratory stage of research, where the 'there' could be considered, from the vantage point of Kisumu. So Kisumu could be considered to be a '*strategically placed*' ethnographic location,

[85] Control, U.C.f.D. *CDC activities in Kenya* 2010 [cited 2010 17/02/10]; Available from: http://www.cdc.gov/malaria/malaria_worldwide/cdc_activities/kenya.html.
[86] Marcus, G.E., (1995)

in the sense of all the 'theres' of collaborations.[87] This means that spatially the relationships between local and global needed to be considered. [88] The stages of this phase are illustrated below.

[87] Marcus, G.E., (1995)

[88] Marcus, G.E., (1995)

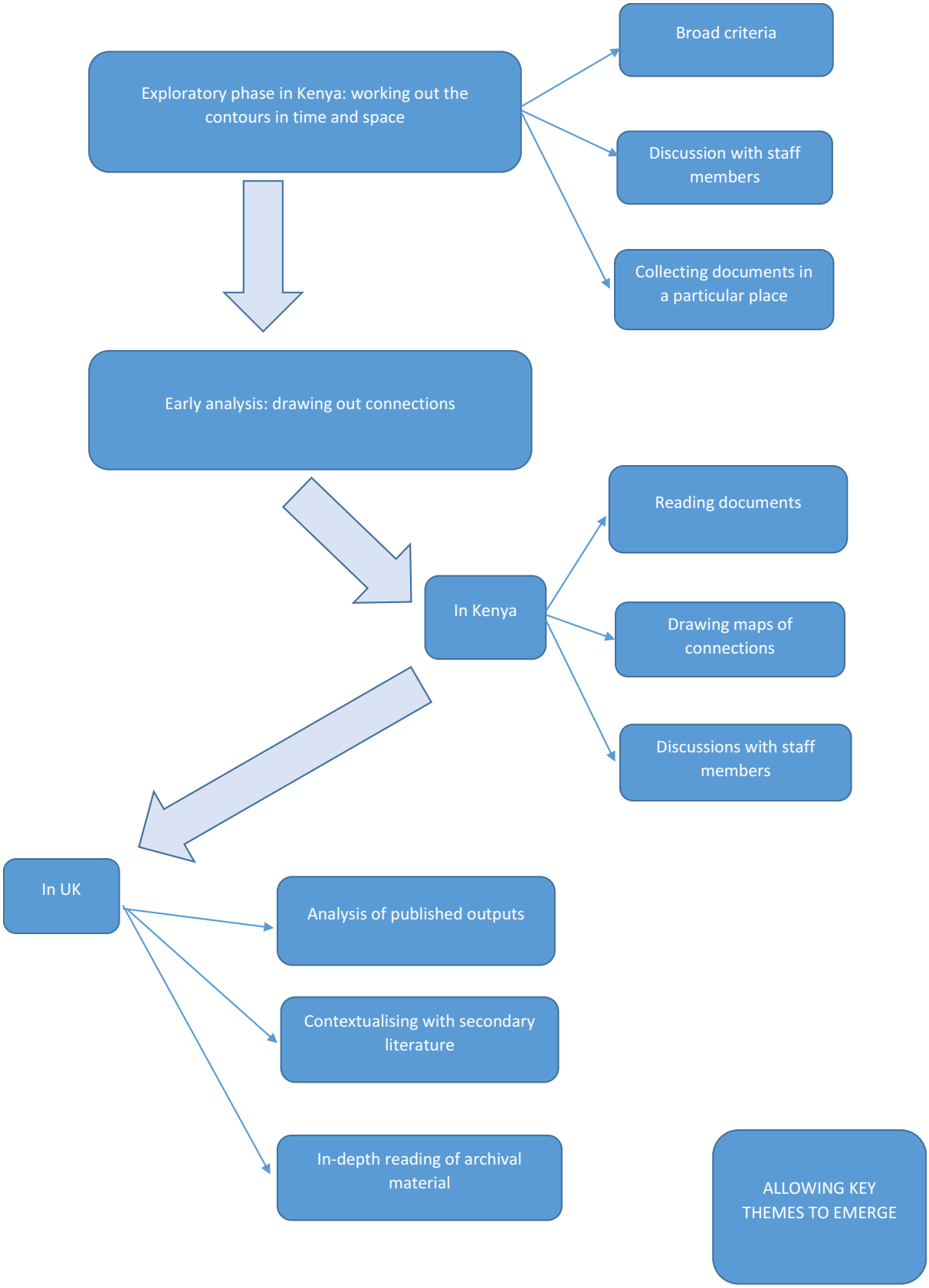

FIGURE 2 DIAGRAM OF RESEARCH PHASE

3.3.1. Collecting and archiving documents

In order to begin my exploratory, early stage research, I went to the place where transnational research was largely being conducted in Nyanza Province; a place called the Centre for Global Health Research (CGHR). Why CGHR was of particular interest to me for this thesis was because it was originally set up as the first national malaria research institute following political independence in 1979. In order to begin my early stage research, I arranged a meeting with Dr Vulule, the Kenyan Director of the research institute. Dr Vulule had a personal interest in history and offered his encouragement of the project. Dr Vulule was supportive of the broad entry point of the history of research in this place and allowed me to go through the documents held in the research institute in order to help me refine the research questions. Due to the careful collection and administration of documents, this research institute held a valuable informal archive. This informal archive is reflected on throughout the thesis as it becomes part of the narrative of this thesis. However, here it is described as being of relevance to the methodological choices made. The photograph below (Figure 4) illustrates the way in which some of the documents in the archive were stored by the Director.

FIGURE 3 PHOTOGRAPH OF INFORMAL ARCHIVE AT THE BOARD ROOM OF CGHR KISUMU, KENYA

As noted above, on this first trip I kept the criteria for collecting documents very broad, basically anything relevant to the day-to-day goings on of research in Nyanza Province historically. Examples of the documents collected include documents on the daily running of the research institute, such as staff training, personnel, finances, supplies, transport, administration, housing and the library. They also include correspondence between the malaria branch of KEMRI and KEMRI headquarters; scoping reports of international collaborators, such as the Japan International Collaborating Agency (JICA) and the American Centre for Disease Control (US CDC); conference papers; internal office circulars; and scientific reports. Documents of particular interest included correspondence between the research institute and headquarters, local hospitals, Ministry of Health, international collaborators and

minutes of meeting, because of the way these documents illustrated the connections between science and the place in which it was being conducted, and connections to other places. As well as formal typed documents, there were also handwritten notes, as illustrated in the photograph presented as Figure 4.

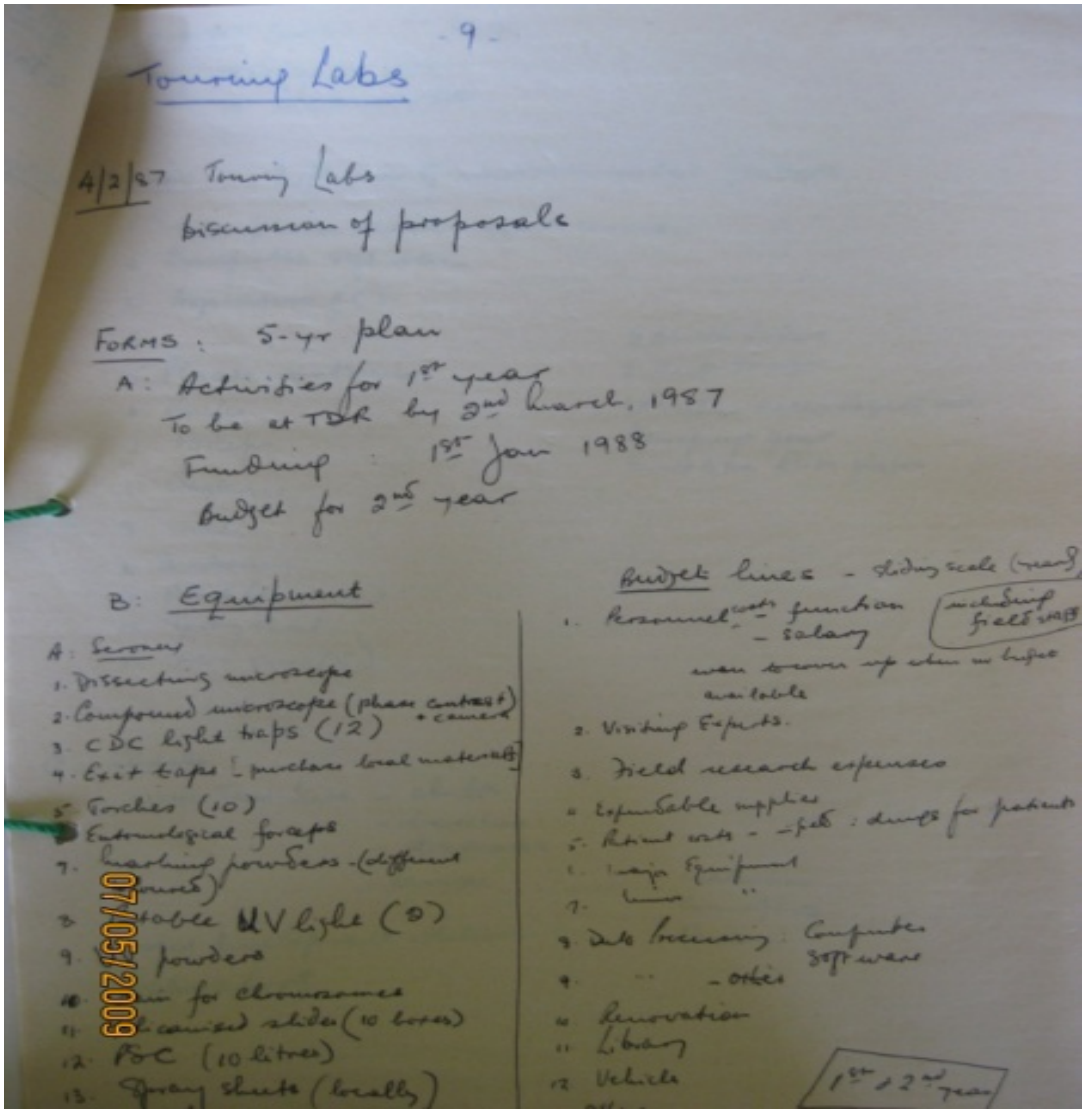

FIGURE 4 EXAMPLE OF ARCHIVE DOCUMENT COLLECTED FROM THE INFORMAL KISIAN ARCHIVE, KENYA

As I knew that I would be doing a lot of the analysis back in the UK, I took photographs of the documents of interest. I also wrote short descriptions of each document, especially noting where the original documents were stored. The descriptions and photographs were catalogued into an endnote database. This is illustrated in the following screen shot (Figure 5).

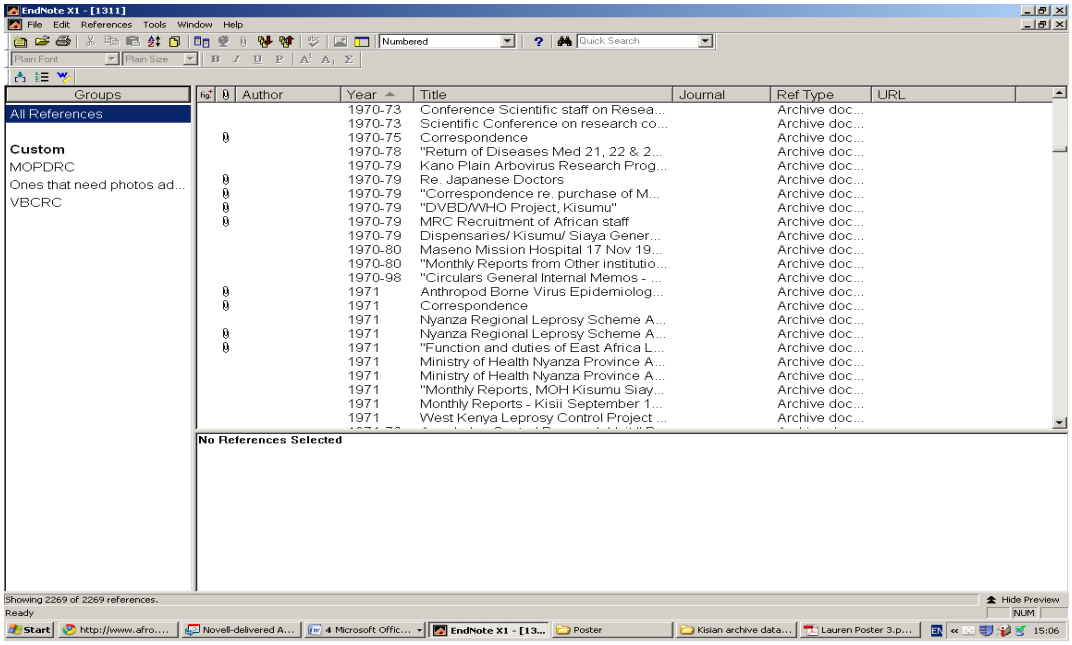

FIGURE 5 SCREEN SHOT OF ARCHIVE DATABASE, DOCUMENTS COLLECTED AT THE CGHR

While collecting these documents I was based each day in the research institute, which mean that I was able to discuss the research with staff members there. This enabled me to take on board their feedback with regards to documents that would be particularly interesting to look at.

3.4. EARLY ANALYSIS: IN KENYA

3.4.1. READING THE DOCUMENTS

This first trip to Kenya also involved the reading and early analysis of the documents which were being collected. The main task of this was to draw out the various connections between the different people, institutions and objects working together in this place, and a sense of how this changed over time. I was aiming overall to gain a chronological sense of the research institute over time from 1979 to 2009. In doing so I was also aiming to identify key people to interview and also to map out the key partners who had collaborated with the research institute. On this first trip I took field notes during each day and typed them up each night. This amounted to 30,000 words in these two months. In Appendix 1 I have included an excerpt from field notes as an example of how these observations led to particular areas of interest.

3.4.2. DRAWING MAPS OF CONNECTIONS

This section explains the way in which the connections were drawn out in order to map out the partners and forms of collaboration. I wrote out a list of all the different names of organisations that came up in the documents. In addition to the names of the organisations, I also wanted to understand the forms of collaborations that occurred between these organisations and KEMRI. In order to do this I began to draw out visually the various connections. Using the documents alone, it was difficult to gain a sense of the various different connections and paths of accountability between the different organisations. This is where being physically based at the research institute was of great value. Staff members based at the research institute were extremely friendly and often keen to contribute to articulating the history of the research institute. They would often take time to explain what the different organisations were, and look at my maps and correct them. These maps can be found in Appendix 2. It was also through being at the research institute on this first trip that certain aspects became apparent, which I decided it would be important to explore further.

3.5. Early analysis: in the UK

This next section describes the analysis that continued after I returned to the UK. After two months in Kenya I returned back to the UK to begin further early analysis of the documents collected and my field notes.

3.5.1. Analysis of published outputs

In addition to reading the electronic informal archive of documents I had digitised back in the UK at this point I also conducted extensive analysis of the published papers on malaria that came out of the research institute between 1979 and 2009. Tables of these analyses can be found in appendices 4 to 6. These were read and extracted from each of the publications was information regarding the authors, collaborating institutes and, most importantly, the aspect of malariology that was being explored through the publications: what the scientists wanted to know about. This was in order to consider how this did (and did not) change over time.

3.5.2. Contexualising with secondary literature

In addition to reading the specific documents I also read secondary literature about the history of research in Africa and the history of Kenya broadly, including novels.[89] In addition to the geographic specific literature, I also read wider literature to guide how the past of science could be approached methodologically in light of the academic literature and the materials at hand.

I also attended workshops and conferences in the UK to make sure that this thesis was of contemporary relevance to the wider history of science community. At these conferences, the theme of 2009 appeared to be the struggles for historians of science and medicine in considering the 'global' and also conversely, for global historians to consider the history of science(s) and whether that word was actually helpful when researching these histories. Of most relevance was the conference in Cambridge entitled 'Are we ready to recast a 'global' history of science?' and the 'International Conference on the History of Medicine and Global Connections' in London.

In December 2009 I also attended a conference in Kilifi, Kenya called 'Who are the Public of Public Health'. Here I presented a talk and poster entitled 'Morality, Technology and Epistemology: The Biography of a Kenyan Research Institute 1979-present'. The poster presented at this conference can be found in Appendix 5. Here I presented the early stages of work I had done so far on the project and received feedback from a range of historians, anthropologists and medical scientists on the project that I had in mind. Their feedback at this early stage was very helpful.

3.6. THE EMERGENCE OF EARLY THEMES

Gradually while still in the UK themes began to emerge from this early analysis. The following diagram (figure6) displays all the various ways in which the research institute fitted into the broader structural context of Kenya.

[89] Such as Ngugi, W. T. (2002). A Grain of Wheat UK, Penguin Classics Vassanji, M. (2005). The in-between world of Vikram Lall Canongate Books

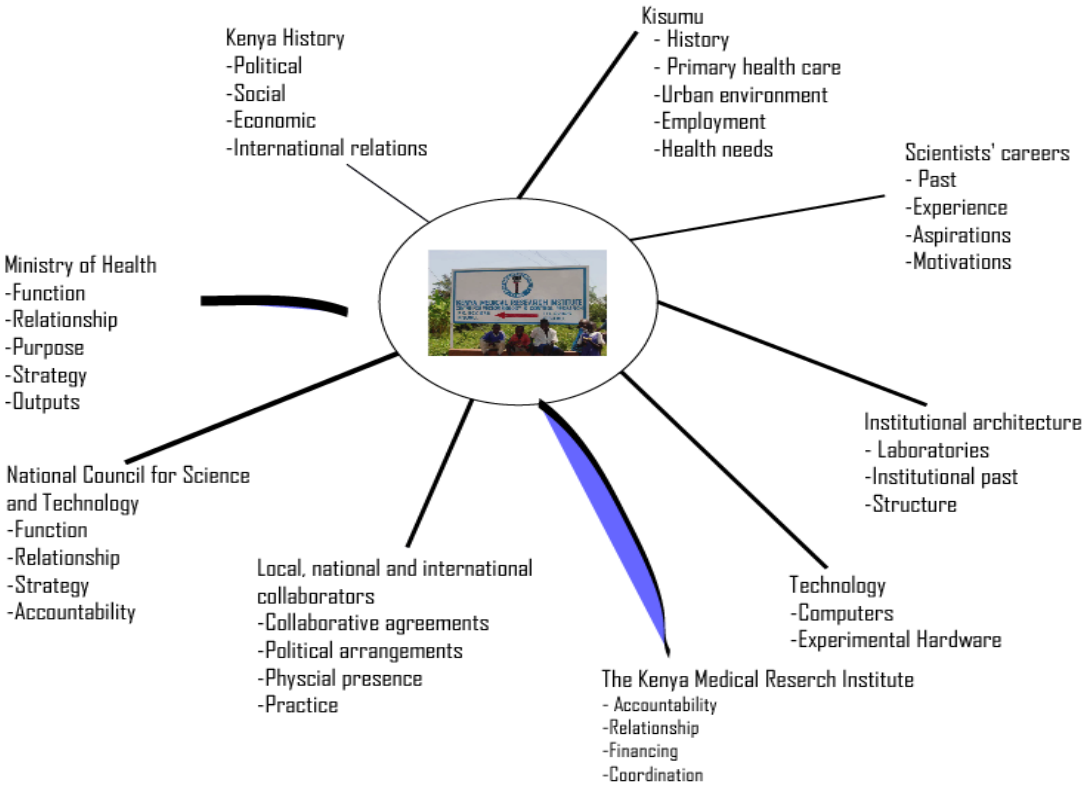

FIGURE 6 DIAGRAM OF IDEAS IN EARLY STAGE ANALYSIS

Through time spend reading the documents and also just being based at the institute various themes of interest began to emerge: all grounded in the above process and not determined prior to the research. These themes included malariology, data, funding and physical structures and departments. In line with the aim of this thesis, there were productive tracers for exploring what kind of science was produced in the international, yet geographically specific, socio-cultural context of Kisumu and how this did and did not change over time. While I go on to discuss each of these themes separately, these traces in practice converge. For example, funding applications will be guided by novel approaches in malariology, and data collection and analysis will depend on the contemporary theories of malariology. The convergence of these themes is what will enable me to tell the story of research in a place from 1978 to the present. Further descriptions of each of these themes can be found in Appendix 6. In summary it was extremely useful to have this exploratory phase and decide on the particular themes of interest.

3.7. SECOND PHASE OF RESEARCH

Having identified the above early themes and being more familiar with the context and a chronological sense of the research institute, I was able to move onto a deeper second phase of research where I returned to Kenya for six months of intensive fieldwork. This third trip to Kenya consisted of a longer stay between April and November 2010. The majority of time on this trip was spent on archival research using both formal and informal archives, although from July onwards the archival work was complemented by oral history interviews with current and retired staff members. The following section describes the second stage of my fieldwork in 2010 and focuses particularly on the interviews I conducted. The diagram below (Figure 7) illustrates the second phase of the research process.

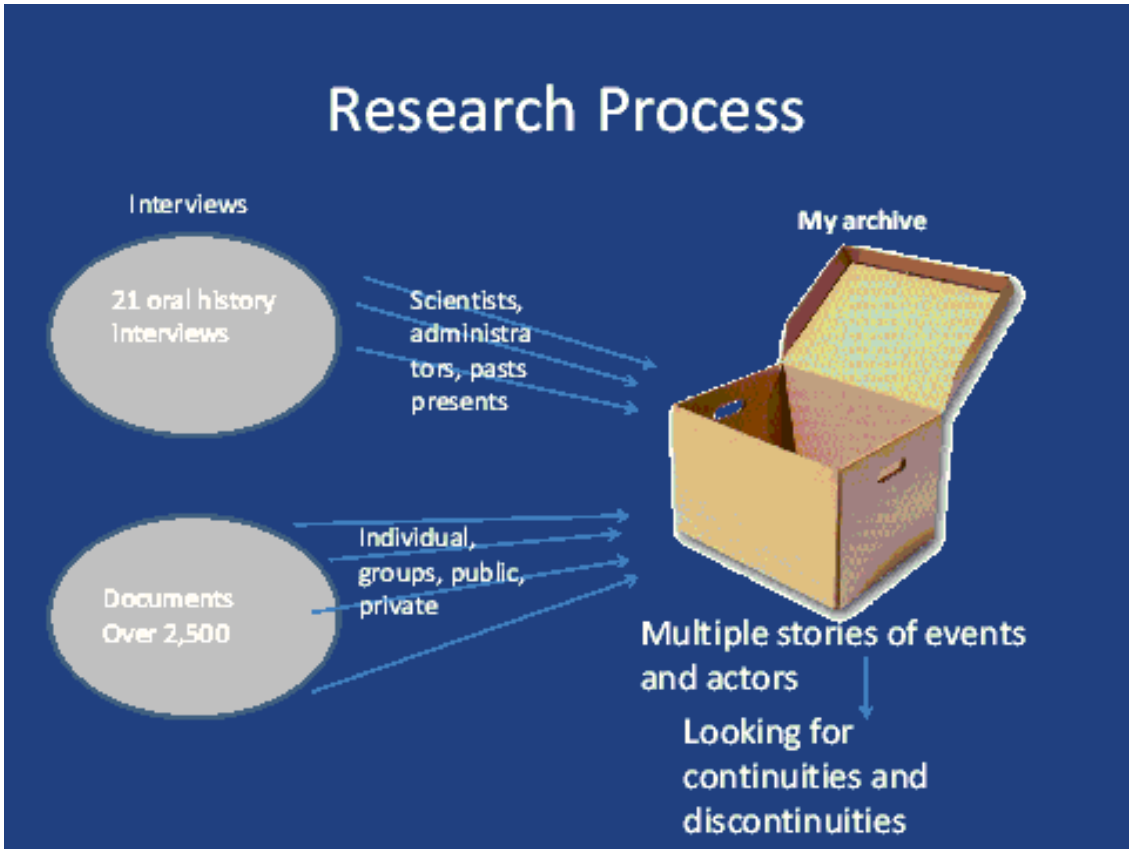

FIGURE 7 RESEARCH PROCESS

As well as conducting archival research, my own presence at the research institute enabled me to observe and listen to the various juxtapositions of scientific research over time. While the time frame of the current incarnation of the institution is 1979 to the present, it is situated in a landscape of scientists with careers dating back to

the 1930s, experiences of colonial and east African research endeavours and technologies which have lasted through these times, as well as ones which have arrived more recently, all embodying hopes, frustrations and ideas of the futures of science.

During every stage of the research I kept a reflexive journal in order to record my social interactions. These notes helped with my iterative research process. I discuss the way in which the notes and also visual notes (photographs) informed methodological decisions. Throughout the research process I aimed to reflect upon my limitations as a researcher and upon the methodological approach I was using, and think critically about the sources I was choosing to use. The diagram below (figure 8) illustrates the relationship between the sources I used.

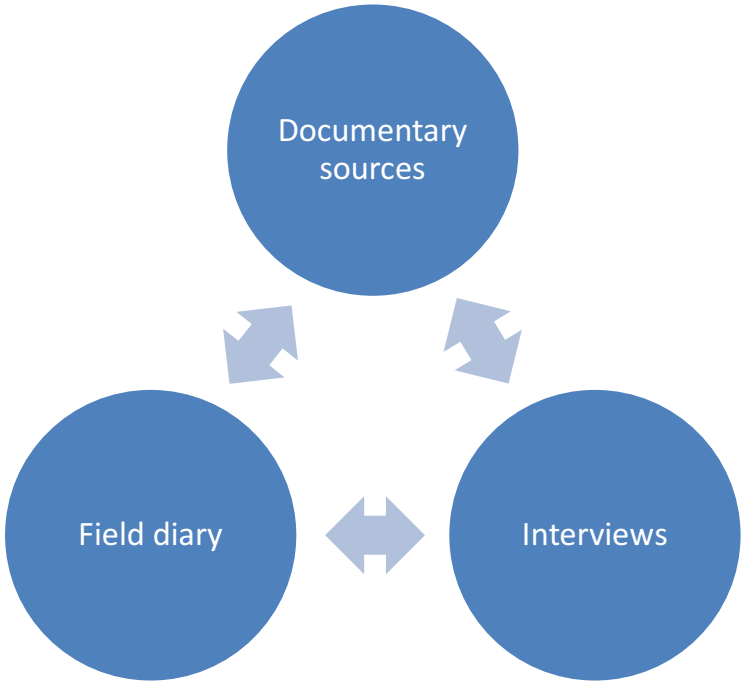

FIGURE 8 RELATIONSHIP BETWEEN SOURCES

3.7.1. The Kenya National Archives

The Kenya National Archives were useful for attending to the first and second objectives of this thesis. For Chapter 5, which covers the first objective of the thesis 'to map out medical research on a national level in the 1970s', it was important to

look into the formation of the biomedical research centres at a national level, for which archival material was helpful. For example, at the Kenya National Archives all documents pertaining to the setting up of KEMRI 1977 to 1979 were read. In addition to documents specifically on KEMRI, documents pertaining to the setting up of the NCST were also read.[90]

Archival material also proved valuable in addressing the second objective of this thesis, to 'map out the local context of medical research in Nyanza in the 1970s'. In order to do this documents relevant to Nyanza and health were also surveyed in the Kenya National Archive. Therefore, in the Kenya National Archives as well as looking at a national level I also looked at the positioning and relationship between the Nyanza Province and the national level and international connections of medical research. Here I looked into what documents were available within the Ministry of Health documents of Boards and Committees (such as the East African Council for Medical Research and the later NCST); Associations; Medical Services; International Organisations; Reports; Institutes; Diseases (such as malaria); Drugs; Administration; Establishment; and Research. Research on the malaria branch of KEMRI, which takes centre stage in Chapter 6, 7 and 8, also relied somewhat on material from the national archives. In order to contextualise the malaria research institute it was considered within the historical context of the province of Nyanza. However, for these chapters other sources described above and below were more heavily drawn upon.

3.7.2. CONDUCTING THE INTERVIEWS

Alongside documents, oral histories are acknowledged as being valuable for gaining insight into the stories which are 'hidden from history', which is helpful for going in-depth into the various interpretations of the history of this particular institution.[91] It is also through oral histories that questions surrounding the layers of time are able to be asked in a way which is not possible through documents. The interviews could be used to consider how the history has been experienced by different people. In

[90] The NCST was administratively above KEMRI and was set up shortly before. This is discussed further in Chapter 5.

[91] Perks, R. and A. Thomson, Eds. (2006). The Oral History Reader London, Routledge.

preparation for conducting interviews, I attended a one-day course at the Institute of Historical Research on oral history methods. I also completed a module at the LSHTM on Qualitative Methodologies.

Twenty one oral history interviews were conducted with 18 people associated with the research institute. The participants were identified during the earlier stages of this research, in the mapping and secondary and primary source literature review. An interview with these participants was requested, and the information sheets and consent forms given out and completed these along with the photo release forms can be found in appendices 10-12.

It was important to be able to find people who had a variety of experiences with the research institute over time. Therefore, the following process was used to identify initial people to interview: Reading documents related to the research institute to identify staff members; and during the interviews, asking interviewees for suggestions of other staff members who should be interviewed. Further people to be interviewed were identified as initial interviews were analysed and reflected upon, with interesting themes which emerged from the interviews directing further avenues of enquiry.

Criteria for inclusion of participants

People who have been employed to work on Malaria research in Kisumu by KEMRI, who have either been identified in archive documents or recommended by others.

Criteria for exclusion of participants

All those within the inclusion criteria who chose not to participate in this project. Any staff members who have since moved away from Nyanza Province and I cannot arrange a meeting with.

The sampling procedure for interviews

-Registry documents of the research institute will be used to identify staff members who meet the inclusion criteria.

-Everyone identified in the documents who meets the inclusion criteria, will be informed of the research, given an information sheet and invited for an in-depth interview.

-During the interviews, interviewees will be asked for suggestions of other staff members who should be interviewed

-The interviews will be analysed continuously throughout the research, interesting themes which emerge from the field will direct further avenues which may lead to looking at different documents.

-In a cyclical manner this may lead to other further people to be interviewed.

All the people identified for interview had been involved with the research institute in various ways and included secretaries, directors, entomologists, librarians and members of the land committee, see appendix 9 for a full list. The length of time these people had been at the research institute ranged from two years to over thirty years. While other methods could have been employed such as random sampling of interviewees this may not have lent to staff members with such a range of experiences. I was also restricted by the length of time I had available to conduct the interviews and also staff members who were still based near Kisumu.

All the interviews were conducted in English; I was able to conduct the interviews in English because it is the national language of Kenya (alongside Kiswahili) and also the language of science used in Kenya. This meant that everyone I interviewed, by the nature of their involvement in the research institute, was able to speak English. While this did involve potential limitations with the interviews not being conducted in Dhulou (the local language), this was the only practical way that I could conduct the interviews myself within the timeframe of my fieldwork.

The locations of the interviews were conducted either in the clinic, office or boardroom of the research institute or in people's homes. The location was chosen through discussion and agreement with the interviewee concerned. I wanted to find a common ground between the feasibility of the location and finding a place where the interviewee felt most comfortable to be interviewed. While I did find it useful going to people's homes, I had to balance this with feasibility. The interviews lasted from thirty minutes to a day spent at someone's home. The length of time depended upon how much time the interviewee had for me and also how much information they wanted to share with me (and how relevant this was to the project.) Usually the interviews were conducted by me with the interviewee only. However, on certain

occasions other people, such as wives or friends, chose to listen into the interviews and sometimes they would even contribute. On two occasions, the current Director's messenger who had grown up next to the institute and also contributed to building the place came along to the interviews and on one occasion the Director's secretary chose to come.

The presence of other people in the interviews did not happen without consideration on my side. However, with people being so generous in giving up their time for this research, I felt that they should be in a position to choose whether they wanted other people present. On some occasions the presence of others, such as an interviewee's wife, proved extremely useful with them jogging the memory of the person I was interviewing. The presence of KEMRI staff members or other people during some of the interviews created a specific dynamic. On the one hand it may have limited what came up in discussion due to the concerns of the interviewee of giving a particular impression. On the other hand, the KEMRI/CDC staff, including the secretary and messenger, who attended the interviews, were able to join in discussions and ask extremely helpful questions, which I may not have thought of otherwise.

The majority of interviews were recorded digitally using a small voice recorder. Before interviewing I would ask the interviewee whether they wanted to be recorded. When they chose not to be recorded I took notes instead; this was only the case with one interviewee.

3.7.3. Interview approach

I aimed to contribute to a relaxed atmosphere in the interviews, and hoped that the interviewee would feel comfortable to express any views, opinions and ideas they wanted to for the purpose of the research. Being a young white British female I was aware that I would be received in a particular way. I certainly found that having read extensive archive documents prior to the interviews often surprised people. They were used to people arriving in Kisumu with a particular interpretation of the history of the research institute (discussed in chapter 8). Showing that I was interested in looking in-depth at the history and listening to the interviewee's experiences was something I felt the interviewees appreciated. I adopted a flexible approach, using

guidelines for the interview, which I hoped would take the form of a conversation. During preparation for the interviews, I wrote an interview guide, as an exercise of thinking about the interviews and what I hoped to gain from the interviews. This is in appendix 10. However, I knew that it would be during the process of the interviews that I would learn what was most interesting. I wanted to find out what it was, in this particular context of an interview that people chose what they wanted to tell me. This is why I felt it was important that I was able to conduct the interviews myself rather than use a research assistant, and to analyse them continually throughout the process. This means that the interviews often extended beyond the interview guide.[92]

In the interviews I asked people to share what they wanted of their life history. The value of this approach to interviews is that the interviewee choses the events that they feel are most relevant, and presents events as memory dictates. With every person I interviewed, I asked them about where they had grown up, what they hoped to be, and then how their time at or associations with KEMRI fitted into this. I did not want to assume the significance of KEMRI within their lives, but instead wanted to understand from them the way in which it interplayed. I would simply tell people that I was interested in the history of KEMRI in Kisumu and then listen to what they chose to tell me, then what they chose to talk about when it came to the future. This was helpful for embedding the research institute in the broader context of the place where it was built. Through this process what I began to find interesting was the unexpected disjunctures and multiplicity of futures that emerged in the interviews (discussed in chapter 8).

Documents were also sometimes collected during the interviews. It was through the process of the interviews that documents became of interest, which I then sought out. In addition to this, the process of taking photographs also highlighted links to other documents. This was with the intention of following the issues as presented by staff members and those that arose from the archive documents, which allowed for new themes and questions to continually emerge. Comparing the interviews with

[92] Perks, R. and A. Thomson, Eds. (2006). The Oral History Reader London, Routledge.

textual documents on the same topic enabled me to compare and reflect upon what gets said and not said in the different mediums.

All interviews were recorded, unless permission was not granted by the interviewee. I took field notes before, during and after every interview, which were written up every evening. The most interesting aspects from each interview were transcribed. Files of the interviews were stored as WAP files. Also field notes and transcripts were stored in password protected Word files. Handwritten field notes were stored in lockable storage. Refer to the data storage and also timetable of analysis in appendices 13 and 14.

While I kept my interview questions as broad as possible, at times I would be more specific. For example, when I was unclear of something in the archive, I would want to know how people responded to this. There was an iterative process between the interviews and the researching of the archive documents. This meant that part of the interviews would sometimes be directed towards finding out about specific issues that had arisen in the archive documents. Therefore, sometimes before an interview, I would prepare specific questions in order to clarify certain issues that had arisen from the archive documents. In order to help with this process, I sometimes took historical documents or photographs with me to the interview in order to use these to remind people of things, or as an exploratory way of finding out what responses would arise.

It is notable that almost all of the people interviewed were still currently affiliated with the research institute in some form. However, this also had implications for what they would have been willing to tell me. In addition to this it also had implications for how they viewed the research institute; given that it had offered them a substantial career in comparison to those who had left; which may mean that they would reflect on it differently. Of all the people I was able to contact and invite for interview only one person contacted said that they would rather not be interviewed and preferred an informal discussion. However, it was not possible to contact everyone who I would like to have interviewed. Some had passed away,

moved away or were uncontactable. This is largely due to the methodological approach I took to recruiting the interviewees, being in a particular place.

During the oral history interviews, interviewees would be asked to contribute any materials that they felt were relevant to the history of KEMRI in Kisumu. A particularly fruitful example came from the wife of the first Director of MOPDRC. When I visited her home, to which she kindly invited me, she went into another part of the house from where we were sitting and returned with two folders that she let me photograph in order to digitise and take away with me. The documentation in these folders was collected together by her as part of her attempts to help her late husband to get his pension in the 1990s. The two folders consisted of a collection of notes, letters, and forms. They tell of stores of visits to LSHTM, eye operations, birth registration, and first passports. These included over 200 documents of correspondence between the first Director of the malaria branch of KEMRI and international collaborators, educational certificates, family photographs and the educational life history of the Director, including his time at the LSHTM in the late 1960s. Reading the documents offered an insight into the personal and professional connections between scientists in Kenya, Tanzania and London from the administrative perspective of a Kenyan scientist between the 1950s and the 1970s. As a historian these documents served as a reminder of the function of documents in matters such as gaining pensions. However, the documents were also a methodological caution with regards to informal (and formal) archives in terms of what does and does not get left in particular places (the presence and absence of sources). It was a reminder to reflect upon what was and was not available as a source.

Another particularly interesting private archive came from a secretary of the Kisian Land Committee. The committee formed when people were moved from their land in order to build the research institute. The committee had created a committee archive, over a thirty-year period. The documents included handwritten notes on observations, minutes of meetings, correspondence and photographs. These documents feature a lot in a later chapter. This again makes reference to the extent to which I considered the sources as active.

3.7.4. PHOTOGRAPHS AS DATA

At the end of each interview I would ask the person I had interviewed whether I could take a photograph. I aimed to make this process as relaxed as possible and encouraged the interviewee to stand in whatever position and location they liked. When people were willing to be photographed, the staged photographs posed by the interviewees often offered further insight and I would think about the position they were choosing in an analytical sense. For example, there was the successful entomologist who chose to sit on an expensive armchair, looking towards his flat screen TV, while a member of the land committee chose to stand outside their house with a different photograph with each of their wives.

I found that photographs also helped me to reflect on my own position as a researcher. On some occasions, when it was appropriate and when someone else was present, I asked the person not being interviewed to take a photograph of me with the person I was interviewing. These photographs would be helpful for writing field notes. They have also proved helpful as more time has passed between conducting the interviews and writing the thesis. Looking back and seeing, for example, the expensive sunglasses on my head in contrast to the on one occasion un-employed interviewee has helped me consider my presence in such a context and the performance on both sides of an interview.

I also used photographs more broadly in my data collection than as records of my interviews. After each day I spent at the institute I would come back and write field notes reflecting on the day. In addition to my notes, I found that the photographs I took during my time at the Centre were useful; these could be of the library, or the banana plants grown by a senior scientist on his plot of land within the grounds on the institute, behind a large wall. These photographs would help me to remember the things I had seen, but also the things which I had not noticed though out the day. Between clutching my notebook, listening, and trying to think of relevant questions I was aware that many things were going unnoticed. I would look back over the photographs I had taken each day as I reflected on my field notes. While photographs

have often been used as archival sources in the history of science they are less used in the process of the research. [93]

3.8. Analysis and creating narratives

3.8.1. The reading of documents and interviews

This section describes the way the documents were read analytically. In order to conduct this research, I had to make conscious decisions as to what I would and would not include in the archive. Documents have been gaining increasing attention as ethnographic subjects and methodological orientations. [94] While I think it is important to consider documents as a technology, and the productive–constitutive relationship between people and documents; what documents make people do and what people make documents into. This is not the focus of the project. However, as an object of enquiry I will focus on the authors of the documents, and use this as an analytical category. I will consider who wrote the document and for what purpose. For example, when thinking about the more public documents, I have taken the approach of people such as Epprecht. With regards to transnational health, Epprecht used documents to deconstruct health reports of the World Bank in order to show the historiographical approach used by the bank. Epprecht shows what the bank '*unsays*' about history when approaching health care reforms, so the document, beyond informing about the World Bank's policies on health does something else, it reinstates a certain history.[95]

[93] Doel, R. E. and P. Henson (2006). Reading photographs: photographs as evidence in writing the history of modern science The Historiography of Contemporary Science, Technology and Medicine: Writing Recent Science R. E. Doel and T. Soderqvist. UK Routledge.

[94] Riles, A., Ed. (2006). Documents: artefacts of modern knowledge. Michigan, University of Michigan

[95] Epprecht, M., "Investing in Amnesia, or Fantasy and Forgetfulness in the World Bank's Approach to Health Care Reform in Sub-Saharan Africa" The Journal of Developing Areas, 1997. **31**(3): p. 337-356.

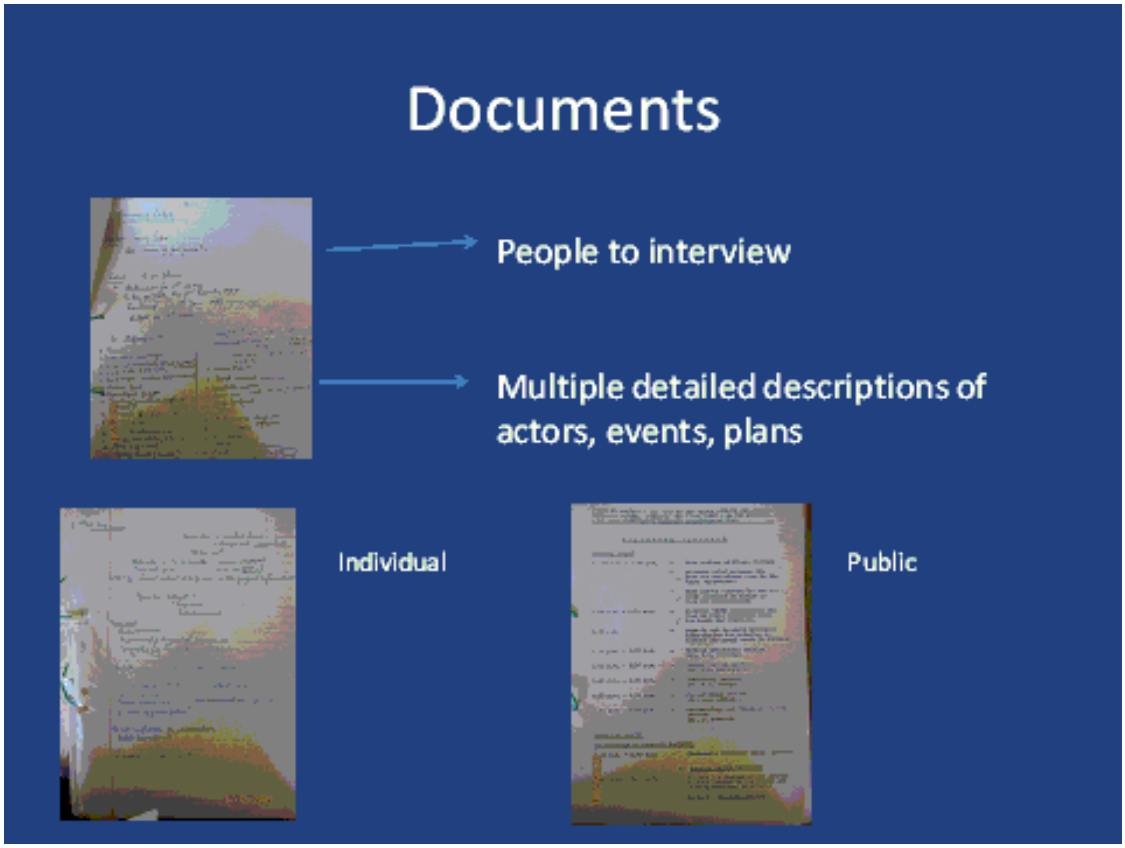

FIGURE 9 THE USE OF DOCUMENTS

The diagram above (Figure 9) illustrates the way in which documents were used in my analysis. It shows that through reading events I would find the names of people relevant to the study to interview. In addition to this, the documents would be used to find the many different descriptions of particular events and plans. Entry points for analysis would be when there were points of contradiction and change over time. It would be interesting to see through the documents when over time, certain ideas would fade away or re-appear. In addition to this, as illustrated below, the reason behind the writing of the document would also be a point of analysis. Sometimes I would be reading a document that was scrawled in handwriting by one individual person; at other times I would be reading a document that had been typed up and intended for a broader audience. I read the documents in the context of wider reading on the social, political and economic context of Kenya at the time. This was complemented by reading contemporary Kenyan literature.[96] This enabled me to

[96] Ngugi, W. T. (2002). A Grain of Wheat UK, Penguin Classics Vassanji, M. (2005). The in-between world of Vikram Lall Canongate Books

consider analytically where these documents fitted in the broader socio-political context.

The interviews were interpreted in a different way to the documents. While they were oral history interviews in that I asked people to talk about the past I did not consider the interviews as representations of a past time. Instead the interviews were analysed within the context of where they were being told. This is in the sense that these were being told to me in 2010 for a particular purpose of writing the history of this research institute into a PhD thesis. Therefore, I did not take the events described as either true or false. Instead I interpreted them as descriptions of the past told in the way in which they were remembered and wanted to be told. The interviews enabled a sense of the interviewee's subjective experience of doing science in a particular place over time. At time the interviews were approached in a slightly different way. This is when particular issues which arose in the archives needed further clarification. However, I still did not interpret the clarifications as necessary true, but they explanation added texture to what was in the documents.

3.8.2. Formulating chapters

This next section described the way I formulated chapters from the analysis and the way in which I found the use of software helpful. NVIVO was used as a filing system. This was then used for shifting around and re-organising what data had been collected through themes. For example, if I noted certain themes arising from the material such as 'imagined futures' or 'fish' or 'money' or 'hope', then I would tag these through NVIVO. I could then look at the formations surrounding these themes by following the theme through NVIVO and looking at when and why it would come up by contexualising this theme through where it was in the data. I could then think about this temporally – for example, how a certain theme changed, reappeared or disappeared over time.

It was through forming larger narratives around place, national and global agendas that chapters began to emerge. While each of the chapters shift slightly in time, it was helpful to make decisions with each chapter as to how much the emphasis was on the different scale of analysis in Nyanza Province, Kenya or global approaches to

biomedicine. At times I found it helpful to draw these connections out, as shown in the diagram below (figure 10).

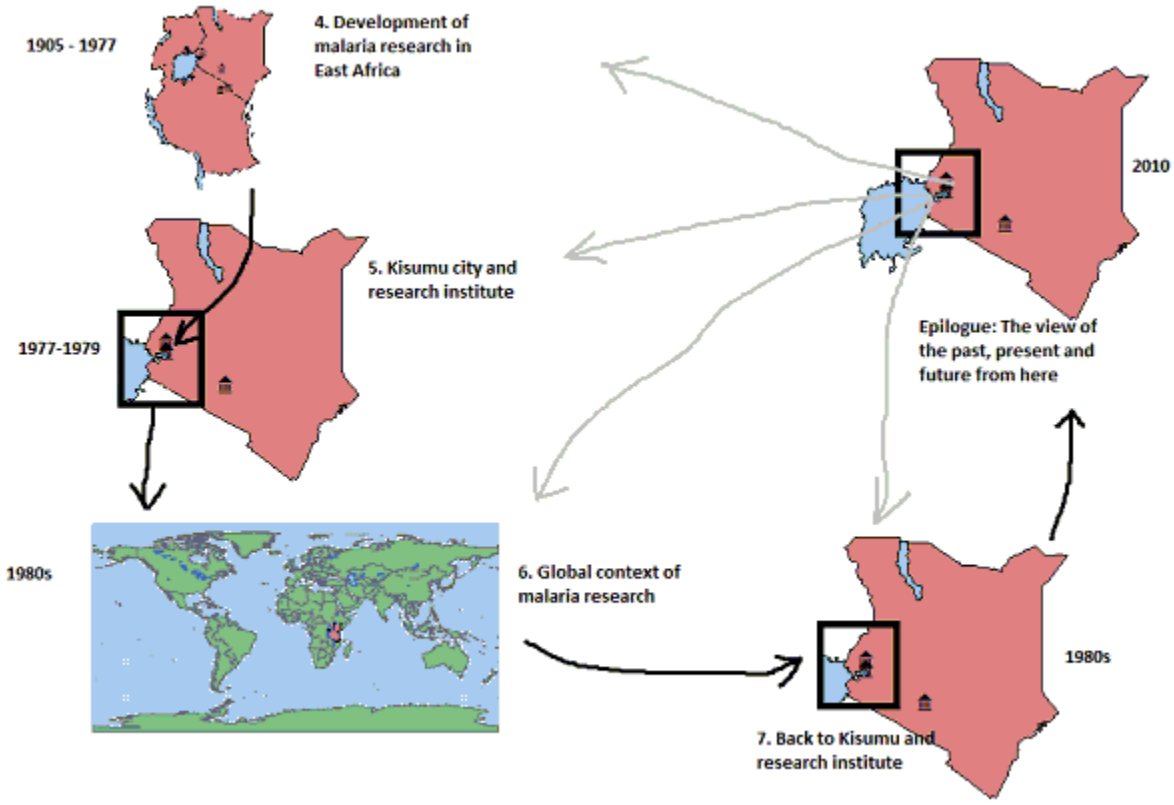

FIGURE 10 DIAGRAM OF THESIS THROUGH TIME AND SPACE

In addition to this I found mind mapping programmes very helpful. Mind mapping was used to structure chapters and decide what should and should not go into each chapter or section. I found that mind mapping became like writing and went through many different stages.

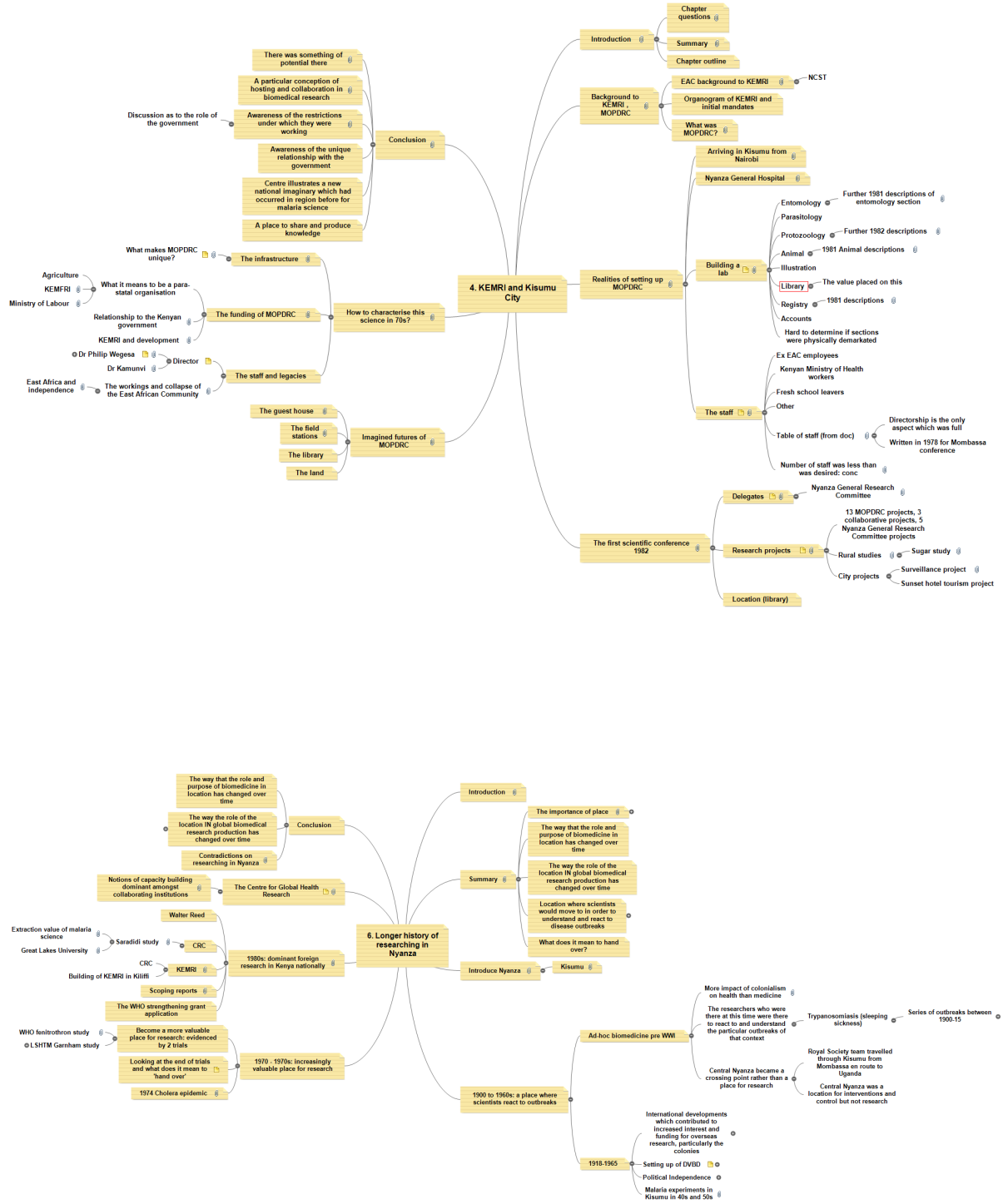

FIGURE 11 MINDMAPS ILLUSTRATING IDEAS

The following table (Table 1) illustrates the final way in which it was decided that the chapters would be organised. We can see that the points of geographic focus shift in time and space through the chapters.

TABLE 1 DEVELOPMENT OF CHAPTERS

Title of Chapter	Time period and geographic focus	Themes
National medical research in Kenya	1977 - 1981 Nation	This chapter looks at the discourses and justifications surrounding science following the collapse of the EAC.
Doing 'national' science in a place	1979 – 1983 Nation and Place	This chapter looks at the connections between the national level discourses of science in Kenya, with the experiences of the scientists of putting this into practice in a place.
Nyanza and global health	1970 – 1976 Place and Global biomedicine	This chapter looks at the historical developments of Nyanza Province in connection with the development of transnational scientific institutions such as the WHO and LSHTM.
KEMRI, Nyanza and global health	1980 – 2009 Place, national and global	This chapter looks at the connection between the plans of the Kenyan scientists in the late 1970s and how these material plans shifted over time in light of national and global approaches to doing science.

3.9. ETHICAL CONSIDERATIONS

Ethical approval was firstly applied for from the LSHTM and once this had been approved it was applied for from the Kenya Medical Research Institute. Careful thought was put into making sure the contributors are fully informed of the nature and topic of this research before taking part in an interview. They were made fully aware that they could withdraw at any point and that, should they wish, any

information already given can be excluded from the final analysis. However, no one requested to be withdrawn.

While formal ethical approval went smoothly, this still left space for personal ethical issues I experienced in the process of research. A personal ethical issue I was concerned with is why I was in the privileged a position to be writing about the history of research in Kenya. I met many Kenyan historians in places such as the Kenya National Archives who would have done amazing projects had they had access to the resources I had. This was an issue I struggled with throughout the project.

One way I intended to approach this was to do my best to make sure the documents I have collected are publicly available and easily accessible for others to use; especially historians in Kenya who may be limited by a lack of resources. The extent to which the archive documents will be available to other researchers depends upon funding. If I manage to acquire appropriate funds in the future, then I will organise for the documents to be catalogued to a professional standard. The digitisation and public availability of the catalogue would greatly increase access to these resources, enabling African historians and scientists to play a more active role in writing and raising awareness of issues facing African science.

With regards to the people more directly involved in this project I was continually presented with issues which could be classified as ethical. A decision I made early on in my research was that I did not feel comfortable paying people for the time to be interviewed. I believed that I only wanted people to share their history with me if they wanted to out of believing in the importance of this history being written. I did not want people to share anything with me out of a desire to be paid. I knew that the interviews would be taking up their valuable time so I went out of my way to make sure that the interviews were done convenient locations and at convenient times. However, I feel I had been naïve to think that this would be as simple. Kisumu is a place where many researchers go to conduct qualitative studies and paying participants in commonplace. While it is classified as transport reimbursement it is a known amongst researchers and participants that this reimbursement often surpasses a days pay. In an area of such high unemployment this kind of

reimbursement is significant. Knowing this I still did not feel comfortable with the way researchers would entice people to open up about personal issues for the purposes of their research for the offer of payment. So I stuck to not paying people and at every opportunity I explained this to the people I was interviewing. While some agreed with my philosophy of research on reflection I feel that others may have agreed but in the hope that I would change my mind and at some point pay them. While I didn't feel comfortable paying for some reason I would feel more comfortable buying people a soda, especially when we were having a long interview in the heat. I noted in one discussion with a staff member (not being interviewed) that he pointed out that "*Ok but there are two ways of giving soda, you can bring the bottle, or you can give the money so they buy a soda*". This was an important point that he made. So while I stuck to my decision not to pay people, as I felt that was important, I felt uncomfortable for certain people who may have thought I would pay them in the end despite what I said.

CHAPTER 4. HISTORY OF MEDICAL RESEARCH IN KENYA

This chapter uses secondary sources to summarise the history of medical research in Kenya from 1900 to 1976. It focuses specifically on malaria and the organisation of research. This summary begins with the arrival of British medical officers, trained in their home institutions, in Kenya in the early 1900s.[97] It then describes the organisation and developments of medical research throughout the colonial period, also considering the role of Africans in research and the ethos of colonial research. The chapter then goes on to describe developments of medical research following political independence. This charts the political collapse of the EAC and the way in which this impacted on early post-colonial research across East Africa. The chapter then summarises what has been written so far about the nationalisation of medical research in Kenya in the late 1970s. What is of particular interest throughout this chapter is the way in which medical research was used in the construction of the modern Kenyan nation and the discourses used to justify this relationship. The chapter concludes by describing the particular research institute of focus for this thesis.

4.1. DEVELOPMENTS IN COLONIAL MEDICAL RESEARCH

4.1.1. EARLY COLONIAL PERIOD

This section begins by describing the arrival of medical officers to the geographic area of Kenya in tandem with the administration of Kenya as a political territory. The presence of the British East India Company (IBEA) to East Africa in the 1880s and 1890s meant that there were a few trained medical professionals and a hospital in Mombasa on the coast of Kenya. Then, in 1905, when the British Administration took over from the IBEA, they inherited the medical staff of the IBEA and also recruited a

[97] I am aware, that this limits the scope of what could be included into a history of medical research in Kenya. There is great value to debates which raise awareness that as historians of science, we are too narrow in our focus of what we incorporate into our narratives of scientific knowledge. This has been approached by historians such as Sivasundaram, S. (2010). "Sciences and the Global: On Methods, Questions, and Theory " Isis **101**(1).

few more doctors for the purposes of securing the health of the British in East Africa.[98]

This first section is about early colonial medical research in Kenya. Much of the historical work on the organisation of medical research under the British Administration in East Africa was written by the American historian Ann Beck, who wrote prolifically on this topic between the late 1960s and the 1970s.[99] According to Beck, initially the purpose of the medical administration in British East Africa was orientated towards the care of British expatriates.[100] In the early colonial period, medical research was largely used in this context as a tool for keeping colonial officers in health in the tropical conditions of East Africa, in order to conduct their broader colonial project. There were also some interventions which involved Africans before the First World War. This tended to be in reaction to particular outbreaks of disease, with the most significant one being that of sleeping sickness (trypanosomiasis). This was the most striking epidemic of this period, with 20,000 people around Lake Victoria dying from the disease in a short amount of time.[101]

Indicative of the time in which Beck was writing, while she researched her topic extensively, she wrote little on the interaction between colonial officers and Africans, and certainly not on the agency of Africans within this context. Instead she stuck closely to the archival sources of the colonial archive. Writing more recently than Beck, historians such as Ndege and Hoppe have researched particular geographic areas of medical research in Kenya rather than following the profession. In doing so they have shown the way that colonial officers interacted with people living in these

[98] Beck, A. (1970). A History of the British Medical Administration of East Africa 1900-1950 Massachusetts Harvard University Press

[99] Beck, A. (1970). , Beck, A. (1973). "The East African Community and Regional Research in Science and Medicine." African Affairs **72**(288): 300-308., Beck, A. (1977). "Medicine and Society in Tanganyika, 1890-1930; An Historical Inquiry " Transactions of the American Philosophical Society **67**(3): 1-59., Beck, A. (1981). Medicine, Tradition and Development in Kenya and Tanzania 1920-1970 Massachusetts Crossroads Press

[100] Beck, A. (1970).

[101] Soff, H. G. (1969). "Sleeping Sickness in the Lake Victoria Region of British East Africa, 1900-1915 " African Historical Studies **2**(2): 255-268

places.[102] Looking at medical research from this perspective helps to unearth the complex relationship between medicine and the state.

Ndege and Hoppe examined the implications of the epidemic for the relationships between Kenyans and colonial officers. Ndege, who wrote about disease and socio-economic change in western Kenya in the early colonial period, wrote that for people living in western Kenya, attempts to control the sleeping sickness epidemic would often be the first point of contact for Kenyans with colonial administrators. As Ndege explained, routine medical or other public services would not be available for people living in rural areas during this time, therefore, it was at points such as epidemics that people would first come into contact with colonial officers.[103] So it would be the experiences of interactions through epidemics that broader images of the colonial administration would be shaped in the minds of people from western Kenya. Ndedge showed that the failure of disease control programmes highlighted the fragility of colonial officers in the eyes of people from western Kenya.[104] Hoppe focused less on the experiences of people in western Kenya and instead on the impacts of interactions between different groups of people working on the colonial science and in doing so he raised attention to the malleability of the colonial science. Hoppe wrote about the way in which the scientists would revise their ideas, through their experiences of being in the field and also in response to African reactions to their policies.[105] Therefore, when thinking back to the issue of medical research and constructions of a nation these historians have shown the way in which, during the early colonial context, medical research played a part in both reinforcing and destabilising notions of authority in this context.

4.1.2. The First World War and medical research

Beck suggested that the First World War was a point at which administrators (who were actually physically based in East Africa) became more sensitised (as individuals)

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[102] Ndege, G. O. (1996). Disease and socioeconomic change: the politics of colonial health care in Western Kenya 1895 - 1939 History Morgantown West Virginia University Hoppe, K. A. (1997). "Lords of the Fly: Colonial Visions and Revisions of African Sleeping-Sickness Environments on Ugandan Lake Victoria, 1906-1961." Africa: Journal of the International African Institute **67**(1): 86-105.

[103] Ndege, G. O. (1996).

[104] Ndege, G. O. (1996).

[105] Hoppe, K. A. (1997).

to an awareness of bringing health to Africans.[106] During the First World War many Africans, especially from Nyanza Province, were used as porters on the side of the British. The colonial administrators found that over half of the Kenyans had to be turned away due to disease.[107] This brought to their attention both their perceptions of the high levels of disease among people living in Nyanza Province. It was seen that medical research could alleviate the burden of disease amongst Africans.[108]

Beck suggested that there were also symbolic reasons for increasing medical research with regards to the perspective of Kenyans. From the First World War there was a growing awareness amongst colonial officers that medicine was being appreciated by Kenyans and could therefore be used as a tool for the justification of the collection of taxes.[109] There began to be awareness amongst colonial officers that the missionaries were better acquainted with bringing health services. There were debates amongst the colonial officers as to the extent to which missionaries should collaborate with colonial officers. Some colonial officers realised that subsidising missionary staff was an efficient use of funds.[110] Yet Beck's analysis of these debates showed that given that hospitals were well received by Kenyans, these should be used as adverts by the British Government.[111] Therefore, a reason for conducting medical research in East Africa was considered to be for the purpose of legitimising the presence of colonial officers and also the collection of taxes in the eyes of Kenyans.

4.1.3. The interwar years

The inter-war years were a period of more co-ordinated research in the region. The build-up of co-ordinated biomedical research was a gradual process over the first half of the twentieth century. From the 1920s colonial administrators were calling for increased regional collaboration between Kenya, Uganda and Tanganyika (Tanganika

[106] Beck, A. (1970).

[107] There are more in-depth discussions of the developments and reasoning behind this described in Beck, A. (1970).

[108] Beck, A. (1970).

[109] Beck, A. (1970).

[110] Beck, A. (1970).

[111] Beck, A. (1970).

was now under British Administration following the First World War). After the First World War, the budget of the British Medical Administration increased and there began to be co-ordinated research across East Africa. From 1918 there began to be the collection of statistics in Kenya and Uganda and it was in 1919 that there was the first systematic study of the area.[112]

From the 1930s onwards there were increasingly calls for the regionalisation of medical research in British East Africa. This did not materialise until the 1940s. This was done through the agency of the East African High Commission established in 1948 as part of an economic project by the British to promote trade in the region.[113] After much debate, in July 1949 in Nairobi, the East African Bureau of Research in Medicine and Hygiene was established to finance and co-ordinate research.[114] Over time the MRC and the Colonial Medical Research Commission organised and financed a substantial amount of research in East Africa. This included research into viral diseases, malaria, sleeping sickness (trypanosomiasis), medical surveys and leprosy.

In 1950 medical research in Kenya became organised through a regional coordinating body, the East African Medical Community (EAMC), connecting Kenya, Uganda and Tanzania. The EAMC was funded from London and consisted of a number of research stations:

-The Institute of Malaria and Vector Borne Diseases, Amani, Tanganika

-The Institute of Medical Research, Mwanza, Tanganika

-The Tropical Pesticides Research Institute, Arusha, Tanganika

-The Virus Research Centre, Entebbe, Uganda

-The Trypanosomiasis Research Organisation, Entebbe, Uganda

-The Tuberculosis Investigation Centre, Nairobi, Kenya

[112] Beck, A. (1981).
[113] Beck, A. (1970).
[114] Beck, A. (1981).

-The Leprosy Research Centre, Alupe, Kenya

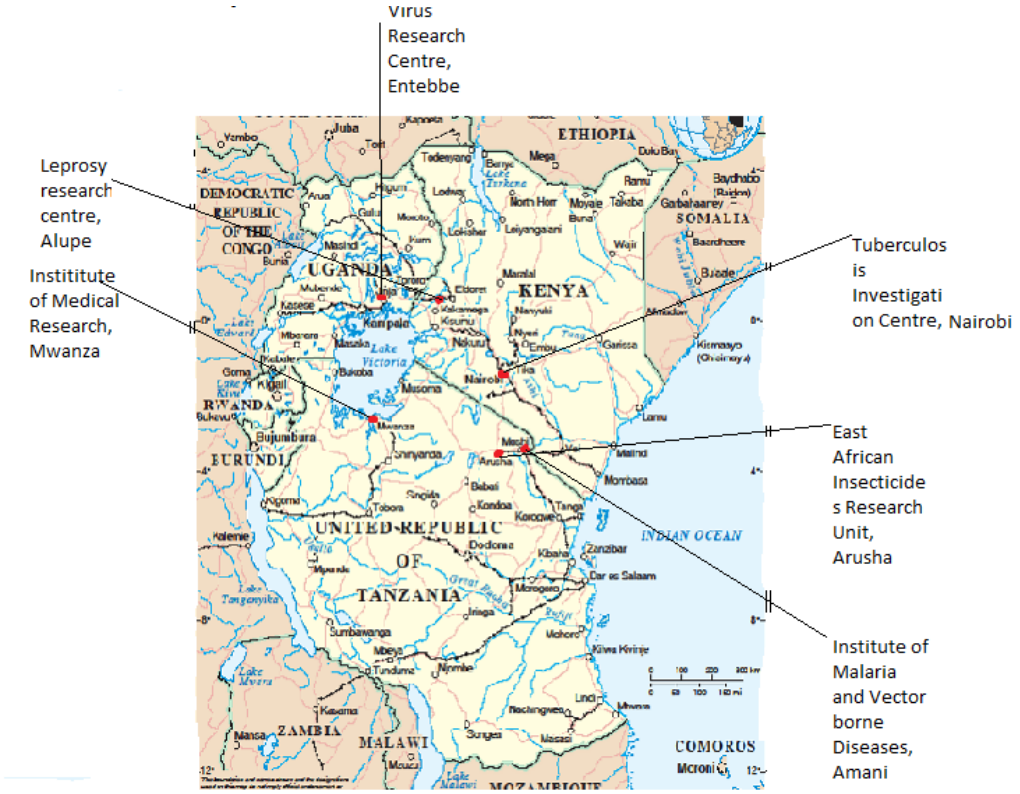

FIGURE 12 GEOGRAPHIC DISTRIBUTION OF EAST AFRICAN MEDICAL RESEARCH INSTITUTES

4.1.4. The role of Africans in research during the colonial period

From the 1920s, following the First World War, there was awareness amongst the British Medical Administration, of the value of the technical training of Africans.[115] As Haddow, who directed the East African Virus Research Institute in Entebbe, Uganda in colonial times, remembered years later "*almost all institutes had also a few men of outstanding ability and long service who were of utmost importance in the work (both field and laboratory) but who lacked formal education qualifications.*"[116] Makerere College, the first University in East Africa was started in 1921 in Kampala, Uganda and became licensed to grant degrees in 1950 from the

[115] For a more in-depth discussion of this period see Beck, A. (1970).

[116] Haddow, A. J. (1980). Research Institutions Health in Tropical Africa during Colonial Times D. Bradley, K. Kirkwood and E. E. Sabben-Clare. Oxford Oxford University Press. p.179, this concern of separation was also recalled by other scientists such as Bradley, D., E. E. Sabben-Clare, et al., Eds. (1980). Health in Tropical Africa during the Colonial Period Oxford, Oxford University Press..

University of London. [117] However, despite the presence of the University, collaboration between universities and biomedical research institutes in East Africa was not always smooth. British scientists have recalled how the sourcing of trained African students into research was difficult, given that there was a gap between the growing universities and the research institutes. Haddow commented on the lack of co-operation between the East African High Commission and the development of universities in East Africa: "*...just a lack of the get-together spirit which would have been so useful".* Here Haddow was referring his thoughts that leading up to independence, future researchers would need to come from the local institutions of higher learning, if they were going to be trained to take up positions in science.

4.1.5. The ethos of colonial research

So as we can see that in the colonial period between 1905 and 1950 medical research in East Africa grew considerably. In the context of this chapter, it is important to consider the justifications surrounding the developments of medical research up until the 1950s in relation to the developments in government. For historians such as Berman and Lonsdale, who have written extensively on the history of Kenya more broadly (less so on medicine), remind us that the increase in medical research and approaches to research needs to be considered under the structural context of colonialism.[118] When thinking about the idea of development and science in the colonial context, Berman and Lonsdale have characterised the science conducted as being a balance of both social control and abstraction.[119] This means that science was used both for controlling Africans, and also for abstraction, in the sense of using science for productivity and labour. The goods from such labour would then be abstracted from the county. Beck, writing more specifically on the topic of medical research, considered the role that medical research played as a function of the colonial government.

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[117] Beck, A. (1970).

[118] Berman, B. and J. Lonsdale (1992). Unhappy Valley: Conflict in Kenya and Africa, Book One: State and Class. Nairobi, Kenya, East African Educational Publishers

[119] For the most extensive summary of the contradictions of the colonial state see Berman, B. and J. Lonsdale (1992). Unhappy Valley: Conflict in Kenya and Africa, Book One: State and Class. Nairobi, Kenya, East African Educational Publishers

Beck suggested that the increase of medicine in British East Africa served as a way to legitimise the presence of the colonial government in this geographic region as it emphasised the 'helping' aspect of the colonial role.[120] From the perspective of people based in the UK who paid their taxes and voted for the government, there was a growing scepticism towards the colonial project as a whole. During the colonial period over time it was realised by colonial officers that medical research appealed to tax payers in the UK on humanitarian grounds, especially towards the end of colonialism, when there were growing concerns of the British (voting) public with regards to colonialism in general.[121] Amidst this, the colonial officers were aware that discussing the role of medicine as part of the colonial project appealed to people who disapproved of the colonial project on humanitarian grounds.

Sabine Clarke, who wrote more recently about the ethos of British colonial science, discussed the way in which the majority of colonial sponsored research was orientated around agriculture and productivity of labour rather than medicine per se.[122] Clarke argued that these research institutes were in tune with the British Administration's aspirations towards orientating research around imports and exports, linked to colonialism. This means that in the colonial context the justification for conducting research in the geographic context of Kenya was not necessarily always linked to the idea that the knowledge produced would be useful for people in Kenya.

In addition to medical research being linked to the internal productivity of colonies, Clarke also wrote about the way in which research conducted by colonial officers in Africa, the West Indies and Asia was considered to contribute to the growing international project of science.[123] Clarke identified this as a period in which there was a separation between using science for 'local problems', with routine analysis such as vaccines and short-term solutions to practical problems and laboratory problems and individual issues relating to particular colonies, and then issues which

[120] Beck, A. (1970).

[121] Beck, A. (1970).

[122] Clarke, S. (2007). "A Technocratic Imperial State? The Colonial Office and Scientific Research, 1940-1960 " Twentieth Century British History **18**(4): 453-480.

[123] Clarke, S. (2007).

transcended political boundaries. It was these transcending issues, part of '*elite science*', which were considered to be overseen by the London Office, which also contributed to the impetus for the setting up of research institutes in East Africa.[124] Justifications for conducting science in the colonies also tied in with the growing international project of science, unlinked to specific geographies. Historians such as Paul Weindling have written about the growth of transnational science during the inter-war period.[125]

If we consider this in the context of Kenya as a region and development of medical research we can see that there was a separation between the two here. In some ways medical research was closely tied in with the development of Kenya as a territory but in other ways it was becoming increasingly linked to international interests. I am referrning here to the development of Kenya as a geographic nation as opposed to the more political aspects of nationalism. What we can see is that as the region of Kenya was delinated by the British during the colonial period, this occurred in tandem with the building of a certain amount of medical research infrastructure. Therefore, in some ways we can say that the development of Kenya as a nation occurred at the same time as the development of medical research infrastructure in the country. However, what this chapter has shown is that until political independence in Kenya the development of medical infrastructure was still tied in with external interests, such as fitting in with an international scientific elite, as opposed to producing locally relevant science.

This above section has outlined the justifications for doing science in Kenya during the colonial period and context in tandem with the carving out of Kenya as a territory. It has described the development of medical research across East Africa during the colonial period. In addition, it has also described the reasons behind the setting up of these research institutes and the discourses of justifications for doing science. Historians have suggested that these were a complex amalgamation of symbolic and humanitarian reasons and also part of the wider global project of conducting science.

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[124] Clarke, S. (2007).

[125] Weindling, P., Ed. (1995). International Health Organisations and Movements, 1918 - 1939 Cambridge, University of Cambridge Press.

The next section considers the way in which biomedical research in East Africa was organised as political independence from the British happened in 1963, and charts the continuities and discontinuities of justifications for doing science through this period of political change.

4.2 Regionalised research and the EAC

4.2.1. The politics of the EAC

This section begins with a brief history of the political collaboration between Kenya, Uganda and Tanzania in the period leading up to and after political independence from the British. Describing the political backdrop of the EAC helps to offer deeper understanding of the context in which medical research in East African was organised. The previous section followed early developments of organising medical research in Kenya through the colonial period. It outlined developments in research leading up to the formation of the EAMC. We saw in the previous section the reasons behind the setting up of the EAMC. The EAC was a political collaboration, orientated around trade, between Kenya, Tanzania and Uganda. The significance of this political collaboration for research is that after political independence the EAMC came under the administration of the EAC.

In 1964 the EAC was officially established with the Kampala Agreement, a political and economic arrangement between Kenya, Tanzania and Uganda. As part of this political agreement four autonomous corporations were set up between the three countries to manage the railways, harbours, airways, postal services, and telecommunications in each country.[126] The EAC did not always run smoothly and the next section draws on some historical analysis of the tensions between the three countries.

The formation of the EAC under the Kampala Agreement of 1964 may be seen as a form of regional collaboration. However, Historians have suggested that for Uganda and Tanzania it was also seen as an opportunity to redress the trade imbalances

[126] Gordon, D. (1995). International Economic Relations, Regional Cooperation and Foreign Policy Beyond Capitalism vs. Socialism in Kenya and Tanzania J. Barkan. Nairobi East African Educational Publishers p.234-4

between the three countries.[127] For in the period leading up to political independence, the British had already established Nairobi, the capital of Kenya, as the financial hub of the region. From the 1950s, Kenya did comparatively well economically to its neighbouring countries, as it had been positioned as the regional centre for investment and finance.[128] Gordon suggested that while collaborative, the EAC was also an opportunity for Tanzania and Uganda to try to rebalance some of the historical economic imbalances embedded during the colonial period.

As well as structural differences between the three countries there were also growing ideological differences. Following independence, the three counties had already begun to take differing political paths, meaning that tensions began to arise between the three countries. Gordon also explained that while Tanzania went increasingly left politically, Kenya chose a less self-reliant path, choosing to collaborate more closely with western countries with the hope of developing a stronger economy and positioning in the world economy.[129] For some historians these diverging political ideologies have been attributed to wider global economies. When describing issues with the EAC, Ikaira explained that at the global level, the 1950s and 1960s had been dominated by competition between socialist and capitalist ideologies. There were debates that, according to Ikaira, were impossible for emerging African nations to ignore.[130]

Over time, the diverging domestic policies of the three countries meant that the political tensions increased. Further to this, the four common services were not successful, which Gordon suggested eroded the commitment of the countries to the Kampala agreement.[131] By 1976, of the community ventures, only the East African Airways remained operational, and in early 1977, the East African Airways was grounded. By June 1977, the EAC collapsed politically.

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[127] Gordon, D. (1995).234-4

[128] Gordon, D. (1995). p.239

[129] Gordon, D. (1995).

[130] Ikiara, G. K. (2000). A Review of Kenya's Public Sector The Context of Privatisation in Kenya P. A. Nyong'o, G. K. Ikiara, S. M. Mwale, R. W. Ngugi and O. Aseto. Nairobi Academy Science Publishers

[131] Gordon, D. (1995).

4.2.2. POLITICAL REGIONALISATION AND MEDICAL RESEARCH

We saw in the previous section that the regional collaboration of the medical research in East Africa developed in the period preceding the establishment of the EAC in 1964. However, while the EAMC was set up preceding the 1964 agreement, it became part of the EAC after the political independence of the three countries. Despite becoming part of the EAC, historical literature on the EAC tends to leave out collaborations in medical research in favour of the four organisations which were set up at the beginning of the EAC: the railway, harbour, airways and postal services.[132] There has, however, been a small amount of literature written on the EAMC post-independence; this section draws on the literature that is available. It follows what happened to the EAMC following political independence and the subsequent collapse of the EAC.

Established in 1961 and previously known as the Bureau of Research in Medicine of colonial East Africa, the co-ordinating body of research became the East African Medical Research Council under the East African Common Services Organisation (EACSO).[133] Beck, wrote about the way in which medical research in East Africa continued to be organised on a regional basis through the EAMC, set up under the administration of the British, following political independence.[134] Tensions arose regarding how regional institution such as this figured post-independence, during a time of struggles for attaining nationhood. The nature of the East African Bureau of Research and Medicine was that it had been set up for large-scale medical surveys.[135] Beck commented that the administrators of the organisation decided that the research should be considered a necessity, not a luxury, and should be 'independent of political alignments'. In order to function and achieve the aims of continuing regional research, funding depended on territorial, inter-territorial and non-government organisations. In her analysis, Beck comments on the collaborative

[132] Gordon, D. (1995).

[133] Beck, A., (1973) "The East African Community and Regional Research in Science and Medicine". African Affairs, **72**(288): pp. 300-308.

[134] Beck, A. (1973). Pp.300-308.

[135] Beck, A. (1973) Pp. 300-308.

approach of Kenya, Uganda and Tanzania in comparison to the previously seen competition between the German and British colonial officers in the region:

> *The scientists have quietly and perseveringly demonstrated a decisive aspect of the philosophy of community: their work on behalf of the eradication of hunger, poverty and disease is a potent argument in favour of continued cooperation between the East African States.*[136]

Beck wrote about the way in which medical research continued despite the political tensions of the 1960s and 1970s. According to Beck:

> *The scientists working through the councils of the community appear determined not to abandon regional research and regional institutions because they realise that research undertaken in isolations and in limited geo-political areas would adversely affect the character of their work.*[137]

With political independence, the practice of medical research in East Africa continued but not without certain tensions. There were not a sufficient number of scientists trained who were African in order to carry out the research. Following independence, and with the gradual 'Africanisation' of the workforce, Africans became qualified scientists, filling important positions in research institutes.[138] However, as Beck pointed out, there were still the problems of having a sufficient number of biomedically trained African scientists. Beck mentioned that with political independence there was a problem of shortage of trained scientists, so while Africans occupied top-level positions, scientists also still came from a variety of countries, primarily Britain and Western Europe.[139] In addition to this there were the growing political differences between the three countries that were referred to in the previous section. However, despite these tensions, we also saw that according to Beck for the sake of the science the scientists continued to collaborate on a regional basis. The next section outlines what happened after the political collapse of the EAC.

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[136] Beck, A. (1973). Pp. 300-308.

[137] Beck, A. (1973). Pp. 300-308.

[138] Lumsden, W. R. (1975). "Impact of Independence and Nationalism on Tropical Medicine " Bulletin of New York Academy of Medicine **51**(5): 595 - 607 p.600 Beck, A. (1973). pp. 300-308.

[139] Beck, A., (1973) pp. 300-308.

4.2.3. The collapse of the EAC and medical research

The earlier section described that with growing political tension between the three countries, the political collaboration eventually collapsed. While there were positive reasons for the research which Beck suggested was present between the scientists, this could not surpass the political differences between the three countries over time. The political collapse meant that, while previously there had been free trade and work relations between the three countries, this was no longer possible. The result of this was that amongst other professionals, scientific staff were now repatriated to their own countries. The collapse of the EAC had significant implications for the practice of science in the region. With the political collapse of the EAC in 1977, the organisation of medical research between the three countries became no longer possible.

4.3 The 1970s onwards: moving from regional to national research

The collapse of the EAC resulted in key reorganisations of post-colonial science across East Africa. Each country set up its own national research institute. This thesis is limited to the focus on Kenya's national research institute. In 1977 The Science and Technology Act was passed in Kenya which led to the setting up of the National Council of Science and Technology (NCST). The next sections focus specifically on research.

4.3.1. The Kenya Medical research Institute

In Kenya, after two years of deliberation, medical research became organised under the administration of the Kenya Medical Research Institute established in 1979. KEMRI was set up as a parastatal; a company or agency owned or controlled partly by the government but also dependent on other sources of funding. The move towards parastatals in Kenya went broader than medical research and was a common occurrence during the period in which Daniel Moi was in power. Moi served as the President of Kenya from 1978 until 2002. Very little has been written on parastatals with regards to medical research. There has been some writing on manufacturing or

agricultural parastatals, which is worth brief consideration here. In development studies, there have been debates over the value of the role of parastatal organisations in Kenya. Middleton and O'Keefe are particularly critical of the role of these organisations and wrote that *'Parastatal organisations, originally created to facilitate development and the integration of the rural and urban economies, largely became the means of social control through bribery*.'[140] The authors here are referring to agriculture parastatals, when they raise concern over foreign influence, concerns which have been voiced by other writers on Kenya.[141]

While no-one has written the history of KEMRI, it has been touched on in the narratives of a few broader historical narratives, which are summarised here. Ombongi, as part of a history of the changing interface between science and the state in post-colonial Kenya, charted the shift from the origins of KEMRI as being a place of '*South-South*' collaborations to in 2005, being somewhere where science was "*supported financially from the North, made up by key researchers from the North, and a few collaborators from the South, and conducted in 'fortified enclaves' which tap research material from communities near-by".*[142] Illiffe, while writing a social biography of East African doctors, touched on KEMRI as illustrative of the capitalist shift of science in Kenya, and referred to KEMRON the failed AIDS drug.[143] Ogot, a prominent Kenyan historian, has also touched briefly on KEMRI. Like Illiffe, Ogot also made reference to the failed AIDS drug, and was extremely critical of African researchers:

> *The KEMRON and Pearl Omega episodes cannot be explained in terms of the historical and political context of colonialism. They appear to be nothing but*

[140] Middleton, N. and P. O'Keefe, (1998) Disaster and Development: The Politics of Humanitarian Aid London: Pluto Press p.55

[141] Middleton, N. and P. O'Keefe, (1998) p.68 Lehman, H.P., "The Paradox of State Power in Africa: Debt Management Policies in Kenya and Zimbabwe" African Studies Review 1992. **35**(2): p. 1-34. Mosley, P., "The Politics of Economic Liberalization: USAID and the World Bank in Kenya*", 1980-84.* African Affairs, 1986. **85**(338): p. 107-119.

[142] Ombongi, K. (2011). The Historical Interface between the State and Medical Science in Africa: Kenya's case. Evidence, Ethos and Experiment: The Anthropology of Medical Research in Africa P. W. Geissler and C. Molyneux. Oxford Berghahn Publishers. p.368

[143] Iliffe, J. (1998). East African Doctors: A History of the Modern Profession Cambridge, Cambridge University Press.

manifestations of naked greed on the part of political leaders who feel no qualms about exploiting their own people, including the sick, for personal gain. The stories also confirm the existence of African researchers on hire by anybody, local or foreign, who is willing to pay the price!"[144]

The historians outlined above did not use KEMRI as a central narrative; they only touched on the institute as illustrative of broader themes. As a result, each of these histories that include KEMRI, emplaces the research institute neatly into broader narratives of the corruption and capitalism of science in Kenya.

4.4. SUMMARY

This chapter has outlined what has been written about the history of the organisation of medical research in Kenya from the 1900s onwards. While there has been historical analysis of this context, we saw that in-depth analysis ends at the point of the reorganisation of medical research in the late 1970s.

It is at this point, with the setting up of KEMRI in the late 1970s, that Beck's prolific analysis of East African science ends. This time is yet to be looked at in–depth by a historian. The above sections summarised research in Kenya from the 1900s onwards. In doing so it has highlighted key gaps in the historical analysis. We have seen that while there has been attention paid by historians to the colonial and early post-colonial period, this in-depth analysis ended with the collapse of the EAC. Following independence, the EAMC, while set up by colonialists in the 1950s, continued functioning under the same administrative architecture. Yet this could not continue following the collapse of the EAC in 1977. Following this, the Kenyan government decided to set up a national institute of research in 1979.[145] This means that the late 1970s was a particular time for doing biomedical science in Kenya. As Ombongi suggests, the 1970s was a brief moment in time where research was conducted in the South by southern collaborations, rather than the northern dominated research agenda of the present.[146] This period did not last long, as has been charted by historians of Kenya. The period has been characterised as what is

[144] Ogot, B. A. (2004). Politics and the AIDS Epidemic in Kenya 1983-2003, Anyange Press Limited p.120

[145] For further discussion of this period with regards to the organisation of East African Research see Beck, A. (1973). pp. 300-308.

[146] Ombongi, K. (2011).

known as the 'parastatal shift'. This is where the government privatised much of the public services, organisations and industry. With privatisation a lot of the money came from donor agencies. In addition to this, the 1980s saw the introduction of structural adjustment conditions in Kenya. With regards to health, this meant a push for the introduction of user-fees for health services. Alongside the structural adjustment affects, the 1980s also saw the beginning of the devastating AIDS epidemic, which hit Kenya hard.[147]

While parastatal institutions such as KEMRI were set up amongst these international agreements, the structures of the research institutes (physical structures, workforces, scientific equipment) have a history themselves, which is important to outline alongside the international contexts. Without in-depth analysis, nuanced in-depth historical analysis of this particular time of change of science in Kenya has not been explored. The next chapter draws from archival material in order to describe the deliberations of the Kenyan scientists surrounding the setting up of KEMRI.

[147] For further discussion of the relationship between medicine, the state and internationalisation during this time see Ndege, G. O. (2001). Health, State and Society in Kenya Rochester, University of Rochester Press. Thomas, L. (2003). Politics of the Womb: Women, Reproduction, and the State in Kenya. Berkeley, University of California Press. p.186

CHAPTER 5. PLANNING NATIONAL SCIENCE IN KENYA, 1977-1979

Chapter 4 summarised the secondary source literature on the history of medical research in Kenya. From this, it became apparent that that the late 1970s was a key time in the history of medical research in this region. Previous to this, medical research had been organised on a regional basis across East Africa, between Kenya, Tanzania and Uganda. This regional organisation of research continued after political independence and became part of the EAC. Due to political tensions between the three countries, the EAC collapsed in the late 1970s. As a result of this political collapse medical research collaborations between the three countries could no longer continue. Therefore, it was during this point in time that each country set up a nation body of medical research.

With a starting point of the late 1970s, this chapter begins by looking at the disentanglement of East African research into national research in the context of Kenya. Disentanglement is used here as a way of describing the way in which East African medical research needed to be dismantled in order to be re-built in the national context. The chapter begins by focusing on the practical aspects of disentangling EAMC research, paying particular attention to the infrastructure. It then looks at the ethos of research at the national level in Kenya, paying attention to what the science was planned to be and how it was planned to also interact with the global context of medical research. This is explored by looking at the way in which the envisioned science was planned to fit into both the national context and also the broader international economic order at the time, while staying 'Kenyan'. Ultimately the chapter focuses on the question of what becomes 'old' and what becomes 'new' when re-organising science after political independence.

The chapter then focuses on KEMRI, which was the institute set up as the outcome of these discussions. The funding and the ethos of KEMRI are considered in order to discuss more broadly what became new and what became old in the context of post-colonial science in Kenya in the late 1970s.

5.1. DISMANTLING REGIONAL SCIENCE

While Chapter 4 summarised the historical analysis of medical research in Kenya, it became apparent that this analysis ended in the late 1970s. Therefore, this chapter draws from primary archival materials found in the Kenya National Archives in order to explore this key period of reorganisation of science in Kenya. Reading the archive documents reveals concerns surrounding issues such as the navigation of international collaborations, and the role of science and technology in the social and economic development of the nation. On 29th of July 1977, in the conference room of the government building Jogoo House, the interim Management Committees of the various government Ministries including health and finance, co-ordinated in Nairobi, the capital of Kenya, met to discuss how biomedical science should be organised after the collapse of the EAC. The purpose of the meetings was to '*effect the integration of E.A.C. research services and to supervise their operations until properly instituted within the Kenyan Government.*'[148] The committees were given three months to effect this changeover and to make monthly progress reports to the Committee of Ministers. At these meetings, there were various deliberations of how to nationalise the research. Including how this would fit in with current research and health services.

It was decided that the newly formed institute should be research orientated, continuing the approach of the EAMC. However, it was also considered to be important that these were to fit in with the general health services of the country:

> *It has to be recognised that by far Medical Research by its nature cannot be divorced from day to day services of the Ministry of Health. Further, since Kenya did not have many individual medical research institutes of the E.A.Community or of its own the taken over research units will of necessity use existing facilities which have in the past been used wholly to provide general health services. For optimum mutual benefit to both service and medical*

[148] (1977) Interim Management Committee on the Integration of E.A.C. Medical Research Services within Kenya's Ministry of Health, Minutes of meetings, Progress Report, BY/12/150, Kenya National Archives, Nairobi, Kenya

research, a special relationship has to be worked out between the Ministry and the National Council for Science and Technology.'[149]

Here the scientists and administrators were discussing the collaborative relationship between the Ministry of Health of Kenya and the newly formed NCST. In summary, the committee recommended that the research institutes of the EAC in Kenya should be taken over by the Kenyan Government and '*be strengthened to answer national needs'.*[150]

One key concern was regarding the setting up of national research institute given that the majority of the research stations of the EAC had not been physically based in Kenya.

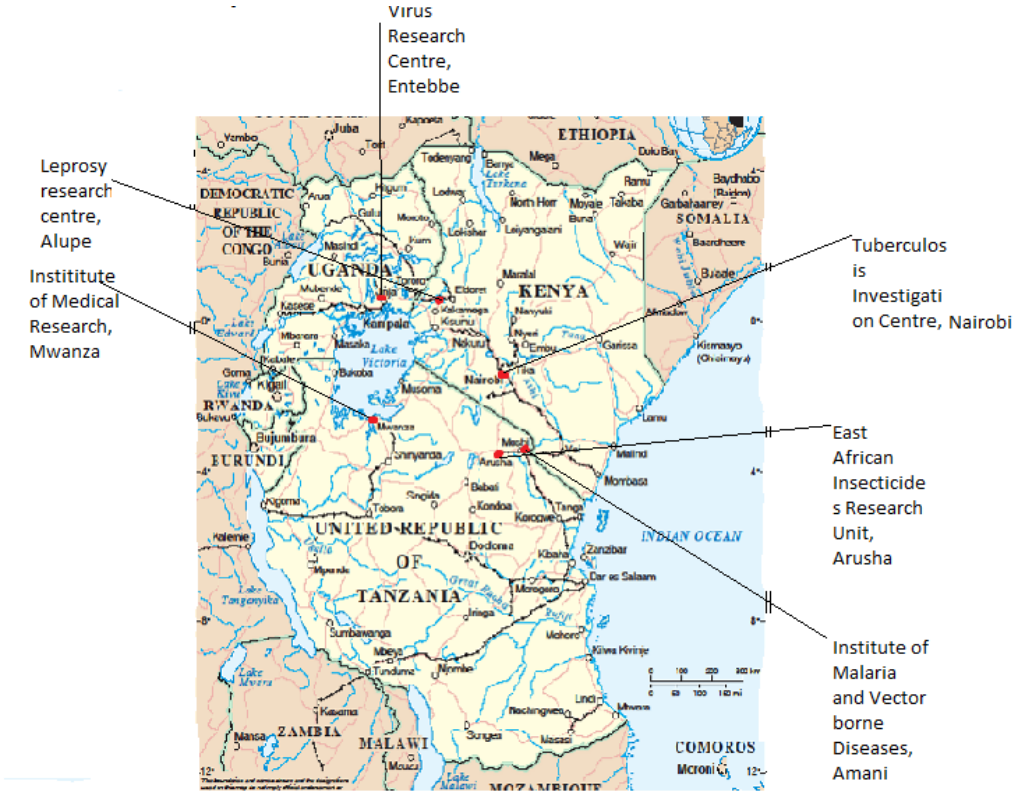

FIGURE 13 GEOGRAPHIC DISTRIBUTION OF EAST AFRICAN MEDICAL RESEARCH INSTITUTES

149 Interim Management Committee on the Integration of E.A.C. Medical Research Services within Kenya's Ministry of Health, Minutes of meetings, Progress Report, 1977 BY/12/150, Kenya National Archives, Nairobi, Kenya

150 Interim Management Committee on the Integration of E.A.C. Medical Research Services within Kenya's Ministry of Health, Minutes of meetings, Progress Report, 1977 BY/12/150, Kenya National Archives, Nairobi, Kenya

We can see that the only institutes physically based in Kenya were the Tuberculosis Investigation Centre in Nairobi and the Leprosy Research Centre in Alupe, in the west of Kenya. The other research institutes of the EAC were physically based in Uganda and Tanzania. This meant that resources were going to be needed to be drawn from in order to build new research institutes in Kenya, if the country was going to have the capacity to carry out relevant research. While there were already research institutes based in Kenya, such as the Division of Vector Borne Diseases, and the Public Health Laboratories, these were more orientated towards routine data collection rather than basic research.[151]

Therefore, we can see that there was a problem. The Ministry of Health in Kenya wanted to continue conducting and producing research which was relevant to the context of Kenya. However, with the political collapse of the East African community, and with many research institutes being physically based in neighbouring countries, Kenya was suddenly in a position of needing to build up capacity for research on key diseases affecting Kenyans such as malaria. The Malaria Research Institute of East Africa had been built by the British in Tanzania rather than in Kenya. Overall budgets for health in Kenya were already low, especially when compared to some of the post-colonial political aspirations of health for all. So what the next part of this chapter explores is how it was that Kenya pulled together the resources to be able to conduct national research and under what justifications were these resources drawn, and importantly where these came from.

In order to understand the particular context of medical research in this place and time it is helpful to consider the broader context of post-colonial Kenya in the late 1970s. Historians and political autobiographies have shown that when independence occurred, in public governmental discourses such as the first development plan of Kenya announced on the radio, there was a large emphasis put on welfare, including health.[152] However, historians such as Beck and Ndege have cautioned that while the government initially professed a socialist idea, in practice it was committed to liberal

[151] Lumsden, W. R. (1975). "Impact of Independence and Nationalism on Tropical Medicine " Bulletin of New York Academy of Medicine **51**(5): 595 - 607

[152] Ndege, G. O. (2001). Health, State and Society in Kenya Rochester, University of Rochester Press.

economic policies.[153] Historians have followed the post-colonial period following independence in Kenya and have shown a nuanced interplay between African socialism and capitalism.[154]

While in-depth nuanced histories of this time have shown that the interplay between capitalism and socialism was particularly complex in Kenya, they have often been limited in their focus.[155] When writing about the first two decades after independence, historians of Kenya such as Branch have tended to focus on the political views of the higher level politicians such as Jomo Kenyatta, Oginga Odinga and Tom Mboya, and how they navigated the new world order.[156] Of interest in this thesis is how non-politicians such as scientists also worked towards building a nation after political independence.

5.1.1. Science and Independent Kenya

Following the collapse of the East African Community, the Kenyan government set up a National Council for Science and Technology (NCST). Therefore these documents were crucial for understanding the plans for medical research in Kenya. African Socialism was referred to frequently in the archival material of the NCST. According to these documents, African Socialism was based on '*political democracy and mutual social responsibility,* which was captured in '*harambee'.*[157] Harambee is a word, which translated from Swahilii, literally means to 'pull together'. It is considered to be the motto of Kenya and in the early years of independence in Kenya, the president Jomo Kenyatta regularly celebrated harambee as a way of encouraging communities to work together to develop the new nation. It was suggested in the documents that the practice of science was intended for all the people of Kenya. In a document written by staff at the NCST for a conference, it was declared that '*The science policy is designed to ensure the rural-urban balance, the even development of the various*

[153] Beck, A. (1981). Medicine, Tradition and Development in Kenya and Tanzania 1920-1970 Massachusetts Crossroads Press Ndege, G. O. (2001). Health, State and Society in Kenya Rochester, University of Rochester Press.
[154] Branch, D. (2011). Kenya: Between Hope and Despair, 1963-2012. USA, Yale University Press.
[155] Branch, D. (2011).
[156] Branch, D. (2011).

regions of the country, the equitable distribution of wealth, and self reliance.'[158] The documents pertaining to the setting up and purpose of the NCST suggested that the ethos was for the utilisation of science and technology for the socio-economic development of the Kenya society. The documents also emphasised the harambee value of working together '*…the development of human resources so that every citizen can contribute towards the national development effort.'*[159] This rhetoric of making science for everyone in Kenya irrespective of physical location was in contrast to colonial approaches to science where it was in favour of urban areas and, as we saw in chapter 4, left many rural areasa untouched.

5.2. "KEMRI" THE KENYA MEDICAL RESEARCH INSTITUTE: A NATIONAL PARASTATAL

After the many deliberations, it was decided that under the NCST there would be a national biomedical research institute, under which all medical research was to be organised. This was established in 1979 as a result of the Science and Technology (Amendment) Act of November. Under this Act, all biomedical research in Kenya, except that on trypanosomiasis, was the responsibility of KEMRI. The institute was directly responsible to the Minister for Regional Development, Science and Technology.[160] The result of these deliberations in Kenya was the reorganisation of the scientific infrastructure of the country, under the setting up of the NCST and under this sitting KEMRI. From this point onwards, KEMRI became the national co-ordinating body of biomedical research in Kenya. This section describes the way in which KEMRI was envisioned to contribute towards the building of a new nation, through the production of biomedical knowledge.

Below is a diagram (Figure 14) of the organisational structure of KEMRI when it was set up in 1979. We can see that there is a Board of Management and Director, based

[158] National Council of Science and Technology, Kenya National Paper for United Nations Conference on Science and Technology for Development, 1978, BY1 214 NCST, Kenya National Archives, Nairobi.

[159] National Council of Science and Technology, Kenya National Paper for United Nations Conference on Science and Technology for Development, 1978, BY1 214 NCST, Kenya National Archives, Nairobi.

[160] The Kenya Medical Research Institute, First Report, 1982

at the KEMRI headquarters. The KEMRI headquarters were initially administering six different research institutes.

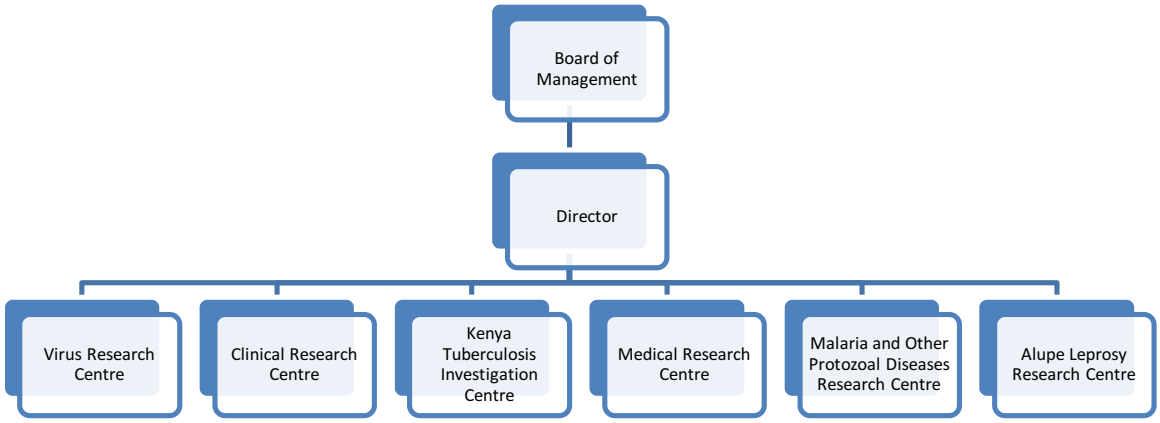

FIGURE 14 ORGANISATIONAL STRUCTURE OF KEMRI

The mandates for KEMRI were as follows;

a) to carry out research in the field of biomedical sciences;
b) to co-operate with other organisations and institutions of higher learning in training programmes and on matters of relevant research;
c) to liaise with other research bodies within and outside Kenya carrying out similar research;
d) to disseminate research findings;
e) to co-operate with the Ministry of Health, the NCST and the Medical Science Advisory Research Committee in matters pertaining to research policies and priorities;
f) to do all such things as appear to be necessary, desirable or expedient to carry out its functions.[161]

[161] The Kenya Medical Research Institute, First Report, 1982 p.12

According to the first public annual report, it was stated that '*…the institute is concerned with the implementation of the national policy on biomedical research, providing facilities for research and promoting new work where necessary along the lines likely to contribute to improving the efficiency of the national health care delivery system.'*[162] This suggests that the specific medical research conducted in Kenya was going to produce medical knowledge that would be used to inform medical policies on a national level, which would contribute to the *efficiency* of the national health care system.

There were further discussions as to the way in which the science was envisioned to be useful to the whole of Kenya. For example, as written in an early public KEMRI report *'...the establishment of KEMRI ...is the first step forward to commit the nation to serious medical research in the firm belief that the application of the findings will accelerate socio-economic development through the provision of improved health services to the majority of Kenyan people*'.[163] This suggests that the idea the medical research of relevance to Kenya was considered to be able to increase socio-economic development of the county. A speech given by Dr Gekonyo, the first director of KEMRI, during the first scientific conference, further explains this position. Dr Gekonyo positioned himself as a strong advocate of the use of science and technology for the advancement of the Kenyan economy:

> *This paper reviews, the haphazard situation in regard to medical research activities in Kenya, in the past, leading on the current developments, whereby the government has pronounced a national policy on Science and Technology. Machinery has been set up for the organisation and coordination of scientific research, proper documentation, and the application of knowledge gained in national development. Whilst according appropriate autonomy to researchers, including those sponsored nationally, towards the development of knowledge, emphasis is put on scientific activities relevant to the solutions of problems facing our developing economies*.[164]

Here Dr Gekonyo is expressing his belief in the link of biomedical research to the socio-economic development of the nation. However, this intention of conducting

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[162] The Kenya Medical Research Institute, First Report, 1982 p.11

[163] The Kenya Medical Research Institute, KEMRI Research Programmes and Projects 1982 – 1985, 1982 p. 11

[164] Dr. Gekonyo, The Kenya Medical Research Institute, 1st Annual Medical Scientific Conference, Nairobi, Kenya, 1980, Kisian Archive, Kisumu, Kenya

research relevant to Kenya becomes increasingly complicated when we look more closely at the funding structures of KEMRI. This brings us back to a key paradox running through the thesis. What did it mean to set up national research post-independence when medical research was increasingly transnational? This ethos of African Socialism, which was used as in aspirational term in the NCST documents in the form of pulling together as a nation became somewhat complex when it came to the nature of transnational collaboration in science.

5.2.1. FUNDING KEMRI

KEMRI was set up as a parastatal. This was the case for many government-owned organisations in Kenya at the time, such as agriculture and engineering. A parastatal is an organisation which is part owned by the government but also dependent on funding from both domestic and international sources. In the discussions about the setting up of KEMRI recorded in the archive documents there were concerns surrounding the extent of international involvement in the institute. It was discussed that '*while not discouraging foreign institutions to engage in medical research, such organisations and individuals should be invited to do so as to maximise effort on medical research, assist in training, establishments of new techniques, ensure continuity of research and availability of research material which might otherwise disappear.'*[165] As we know from chapter 4 with the collapse of the East African Community, Kenya was left with large gaps in capacity for medical research in key areas such as malaria and virus research, as these stations had been in neighbouring countries. Therefore even with the political will for national medical research a large amount of money was still required. This was especially so if Kenya was going to conduct research which was not only locally relevant but also at an international standard. The colonial work of the East African Medical Community had been frequently published in international journals.

There were public declarations about the amount of money the government was going to contribute itself toward science. On 29th January to 1st February 1980, KEMRI

[165] Interim Management Committee on the Integration of E.A.C. Medical Research Services within Kenya's Ministry of Health, Minutes of meetings, Progress Report, 1977 BY/12/150, Kenya National Archives, Nairobi, Kenya

held its first conference in Nairobi. Here the push and extent of government contribution was announced:

> *The Government has further decided to gradually increase financial allocations to scientific research to reach 1% of the Gross National Product (GDP). In the case of medical research K£903,070 was allocated for recurrent development expenditure for the Fiscal year 1978/80, while in the total estimates for Health Research in the Five Year Development Plan, 1979/1983 this allocation is cumulatively over £6,000,000.*[166]

However, one has to look more closely at the funding structures of KEMRI to see the extent to which money was also coming from foreign sources. There was one branch of KEMRI with no specific disease focus known as 'CRC', the Clinical Research Centre. This was set up largely by funds from the US Centre for Disease Control, the WHO and the Walter Reed US Military Branch. In 1980, a memorandum of understanding was signed between KEMRI and the Walter Reed Army Institute of Research (WRAIR) in preparation for collaborative research projects.[167] WRAIR is the medical research branch of the US military. In the same year a memorandum was also signed between KEMRI and the US Centres for Disease Control. This also coincided with a time in which, in the US, ethical regulations surrounding the involvement of humans in experimentation was becoming increasingly strict.[168] It was no longer considered acceptable for American prisoners to be involved in research and certain research organisations in America were looking for areas abroad to expand research involving humans. It is interesting that the CRC branch of KEMRI, the most heavily foreign-funded branch had no specific disease focus but instead was to include all research on humans within the remit.

In addition to the involvement of the USA, Japan also became very involved with KEMRI. The Japan International Collaborating Agency (JICA) was the main provider of funds for the infrastructure of the headquarters of KEMRI. In addition to this JICA were also the main sources of funding the Virus Research Centre of KEMRI. Another

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[166] The Kenya Medical Research Institute, 1st Annual Medical Scientific Conference, Nairobi, Kenya, 1980, Kisian Archive, Kisumu, Kenya

[167] Walter Reed, a US military based organisation are the largest single funders of malaria research, given the impact of malaria upon soldier's performance in previous wars Heggenhougen, H. K., Hackethal, V. and Vivek, P. (2003) The behavioural and social aspects of malaria and its control. UNDP/World Bank/WHO Geneva

[168] Jonsen, A. R. (2003). The Birth of Bioethics. UK, Oxford University Press.

branch of KEMRI was the Medical Research Centre (MRC). This had actually originally been set up in 1964 as an agreement between the Royal Tropical Institute in Amsterdam, The Netherlands and the newly independent Kenyan government. Even at the point at which it came under KEMRI in the late seventies, the MRC was still funded by The Netherlands under its technical assistance scheme. [169] The Kenya Tuberculosis Investigation Centre and the Alupe Leprosy Research Centre were the two centres which were inherited by Kenya from the East African Medical Research Community. Therefore the only branch of KEMRI which was solely funded by the Kenyan government was the Malaria and Other Protozoal Diseases Research Centre (MOPDRC) set up in Nyanza Province. As the only solely Kenyan government funded research station of KEMRI, this centre and the tensions entailed in this globalised context of transnational medical research is the focus of the following chapters of this thesis.

5.3. WHAT BECOMES NEW AND WHAT BECOMES OLD WITH POST-COLONIAL SCIENCE

This chapter is about preparations for the infrastructure of science during the post-colonial period in Kenya. It explores the first two decades of political independence in Kenya.[170] In this chapter I look at two decades, the 1960s and 1970s, as times of continuity and discontinuity for the conduct of biomedical research at the national level. The period following independence was a crucial time for determining the path and possibilities of what science in Kenya could *do* for people in Kenya.

We can see from this chapter that the story of post-colonial science from the perspective of Kenya becomes a story of the period of independence from Britain, along with it being the story of the entry of a nation into a particular economic world order. Close analysis of the negotiations at this time of political change help to make visible the factors at stake in this specific context when considering health, science and the role of the state. While historians have written about it broadly as was approached by the higher-level politicians, this has not yet been considered in the

[169] This was enacted by the 'Royal Tropical Institute Agreement and Exemption Act 1966' which was published in the Kenya Gazette supplement No. 95 on 22nd November 1966. MRC Nairobi (1966) Annual Report Medical Research Centre, Nairobi, Kenya, Royal Tropical Institute, Amsterdam p.2

[170] Political independence from the British occurred on the 12th of December 1963

form of science.[171] It is interesting to follow through the archive documents the ways in which these scientists and administrators navigated the broader economic climate of the 1970s.

It is also important to reflect and consider what was and was not new in the reorganisation of science in Kenya during the 1970s. The political independence of Kenya, was not necessarily a point of the setting up of national science for Kenya or Tanzania or Uganda; it remained regional as an East African collaboration. However, there was a shift towards national science from the late 1970s as illustrated through the story of scientific reorganisation in Kenya. What is important to take from this chapter is that the collapse of the EAC was a point at which East African scientists were forced to develop new ideas about how they would conduct science. In many regards, KEMRI, while new, was being created out of the remains of other administrative organisations. In addition to a complicated past, KEMRI was being established into a particular economic-scientific-technological world order. In order to build up scientific infrastructure and run scientific projects, the setting up of KEMRI involved the complex navigation of an internationalised context of biomedical research on Kenyan soil, which had developed through the particular economic world order of the twentieth century.

During these decades there were multiple notions of development that were utilised in order to justify the promotion of medical research in Kenya. The next chapters look at the tensions surrounding these multiple discourses. What is interesting from looking at the setting up of KEMRI, is the way in which there appeared to be the co-existence of the 'newness' of the setting up of this national research institute, mixed with colonial legacies. We saw that there were references to African Socialism, seen amongst the NCST documents in contrast to colonialism.

What this chapter has illustrated is the multiple roles of science with relation to the state when thinking about development. It becomes clear that on one level, science was envisioned as a route towards 'developing' this newly independent nation in terms of using relevant biomedical knowledge produced in Kenya for efficiently

[171] Branch, D. (2011).

organising and reaching the Kenyan population and also, at times, with increased productivity in mind. Yet also giving the somewhat 'middle' approach of Kenya with regards to economic arrangements with the rest of the world; medical research and the practice of medical research in the country became a sort of diplomatic performance. We saw that amongst this discourse of producing locally-relevant medical knowledge, KEMRI was created as a parastatal organisation. Being a parastatal organisation meant that the institution, while being a national research institute, was also heavily dependent on foreign sources of funding. Yet not all of the branches of KEMRI were dependent on foreign sources of money. This is something which is explored further in the next chapter. Where the different funding sources and resulting implications on the science produced are explored futher.

5.4. SUMMARY

As stated in the introduction, this chapter asked what did it mean to do 'national' science in Kenya after independence? Was there ever a different time of science in Kenya? What is the historical relationship between science and the government in Kenya? This chapter looked at the regional organisation of research between Uganda, Tanganyika and Kenya, set up in the late colonial period, which then continued in the same administrative structure through political independence. Given this continuation, it is argued that with the collapse of the EAC, the late 1970s was the first time that the newly-independent governments of East Africa, such Kenya, were conducting and planning national research. As a key period of re-organisation of science, this chapter then focused in on Kenya and uses archival material to look at the political reorganisation of biomedical science at a national level in Kenya in the 1970s. It follows the plans in Nairobi for the setting up of a NCST and the 1979 Act that resulted in the establishment of KEMRI, the Kenyan National Research Institute, through which all biomedical research in Kenya became administered from this point onwards.[172] This chapter has remained at a national level and followed briefly the establishment of the various research institutes involved in the setting up of KEMRI. The next chapter, looking in depth at one of the

[172] All biomedicine except trypanosomiasis research (sleeping sickness)

branches of KEMRI considers the putting in practice of these plans from a more localised perspective.

CHAPTER 6. THE MALARIA BRANCH OF KEMRI

Chapter 5 focused on disentangling some of the features of regional research in Kenya in the 1970s, by looking at the national level. It explored the practical and theoretical tensions surrounding reorganising medical research which was originally designed as a collaborative endeavour. Given that the secondary source literature ended in the late 1970s with regards to science in Kenya, Chapter 5 was an important chapter to set the scene for the following chapters, using archival sources. From looking in-depth at the funding sources of KEMRI we saw that despite being a post-colonial national research institute, in fact it there was actually only one branch which was solely funded by the Kenyan government on initiation. This was the Malaria and Other Protozoal Diseases Research Centre (MOPDRC) based in Nyanza Province. This chapter will focus on the foundation and early history of MOPDRC: the malaria branch of KEMRI established in 1979. While chapter 5 stayed on an international and national level, this chapter will focus more on place and science. It also draws more extensively from informal archives, interviews, and a choice of sources informed from the people who experienced these shifts themselves. This chapter draws from the many documents found in MOPDRC and aims to unpick the motivations held by early staff members at the research centre. As described in Chapter 3, eight months was spent collecting and reading past documents at the research institute. These documents allowed for insight into the crucial beginning stage of the research institute.

The chapter begins by considering the ethos of MOPDRC, by looking at the ideas and justifications of science as written by its first two Directors. Next we will examine this ethos by looking at how these plans were put into practice. Firstly, this is explored by looking at how the ideas were materially built through the infrastructure of the institute. These plans are then contextualised in the broader post-colonial context of building a new nation in Kenya, and how this impacted upon the possibilities of these hopes of national malaria science. It is interesting to consider how scientists in Kenya in the 1970s, at this time of change, categorised certain ways of doing science and what they considered as ‘in the past’ and ‘in the future’.

6.1 THE RESEARCH OF MOPDRC

Chapter 5 described the historical dimensions to the setting up of KEMRI, on a national level. This chapter focuses in on the malaria branch highlighted in red in the below diagram.

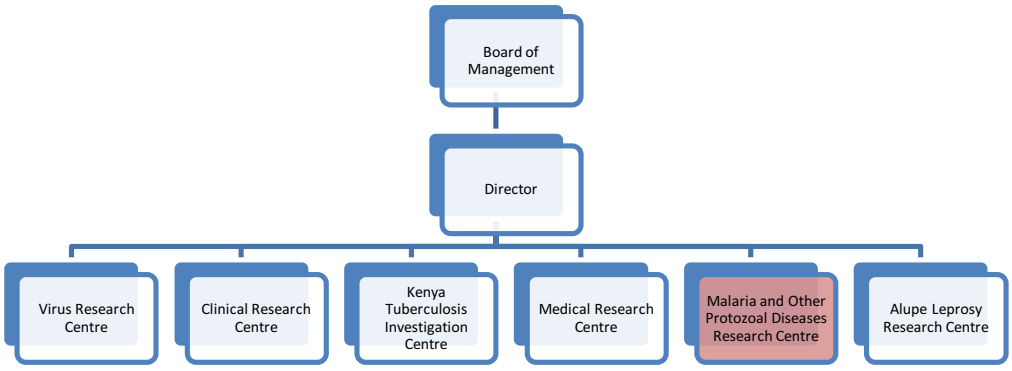

FIGURE 15 ORGANISATIONAL STRUCUTURE OF MEDICAL RESEARCH INSTITUTES

We can see that there were other scientific branches of KEMRI and that this one was the only one to specialise on malaria (and other protozoal diseases). Parasitic means diseases that are caused by parasites, which are organisms that live off their host, and are transported through vectors. When it was set up initially, MOPDRC had five programmes, under which there were proposed research projects. The programmes were as follows:

1. Human Intestinal Protozoa Research.

2. Malaria (which included vectors and infections).

3. Vectors of Other Protozoal Diseases in Kenya.

4. Support facilities:

(i) Research Library and Scientific Literature;

(ii) Scientific Illustration and Cartography;

(iii) Animal Unit;

(iv) Major Capital Equipment.

5. Social, Cultural and Economic Research in Protozoal Diseases in Kenya.[173]

What these mandates show is that the remit of this institute was to look into the various parasitic diseases and vectors. The main parasitic diseases focused on in this research institute were primarily malaria, but also other diseases, such as intestinal parasitic diseases. In addition to looking at the biological aspects of these diseases, part of the remit was to tie these in with understanding the social, cultural and economic research into protozoal diseases.

Alongside looking at the mandates of the centre, it was also helpful to read through the scientific protocols written by the scientists. Many of these protocols were stored in the centre's informal archive (as described in chapter 3). A full summary of these projects can be found in appendix. 13. Here I give an overview of the projects, at least fifteen projects were proposed by scientists at MOPDRC. The majority of these were directed towards the biological control of mosquitoes, through control measures and understanding more about mosquitoes. These projects entailed, for example, looking at the relationship between agricultural techniques and mosquito patterns, learning about mosquito behaviour and finding natural predators of mosquito larvae. The outputs of these early KEMRI research projects were generally not in the form of scientific publications, only one was published in a scientific journal: the East African Medical Journal. This was a publication on the knowledge, attitudes and practices towards malaria (KAP) of a rural community.[174] Outputs were largely in the form of papers presented at the Annual Medical Scientific Conferences in Kenya. The Annual Medical Scientific Conferences, beginning in 1980, were organised by KEMRI, the Kenya Trypanosomiasis Research Institute (KETRI) and the NCST. They were held in Nairobi, with the aim of sharing knowledge and determining research priorities. The papers presented here correlate with the outlined research projects; five were about the understanding and biological control of malaria

[173] The Kenya Medical Research Institute, First Report, 1982

[174] Ongore, D., Kammunvi, F., Knight, R. and Minawa, A. (1989) "A study of knowledge, attitudes and practices (KAP) or a rural community on malaria and the mosquito vector" East African Medical Journal. **66**, 79-90

vectors; [175] two were on the potential of resistance of p. Falciparum to chloroquine;[176] one on malaria diagnosis;[177] one on the supporting of rural health services;[178] and one on malaria control and surveillance in Kisumu.[179] For the rest of this chapter these research projects are going to be unpacked by exploring further the people behind the research projects and the relationship to the area in which they were working.

6.2. LIVING THROUGH CHANGE

In the previous chapter the collapse of the EAC was described with regards to the organisation of science at the regional level. While the collapse of the EAC meant the restructuring of research institutes, it also led to the restructuring of individual scientists' biographies. This section will pay particular attention to the hopes and plans of the staff members based at the research institute.[180] The collapse of the EAC meant that staff based in other parts of East Africa were repatriated to their home countries. So Kenyan scientists could no longer work in Tanzania, for example. The repatriation of scientists meant the availability of some Kenyan senior scientists for medical research.

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[175] Odhiambi, F. M. A. (1980) "A comparative study of malaria transmission rates by Anopheles Gambiae Giles complex and Anopheles f. in Kisumu area, Kenya", Proc. 1st Ann. Med. Sci. Conf. Obudho, W. O. and Kamunvi, F. (1981) "A pilot study of malaria vectors in large-scale sugar-growing area in Kenya", Proc. 2nd Ann. Med. Sci. Conf. Obudho, W. O., Seroney, I. K. and Ukumu, F. M. (1985) "Further experience of the colonization and conditioning for larval predation of Toxorhnchites brevipalpis under normal laboratory conditions", Proc. 6th Ann. Med. Sci. Conf. Serony, I. K. a., Marangalla, G. M. and Ukoma, F. M. (1988) "The adaptation of malaria vectors and Culex quinquefasciatus Say (Diptera: Culicidae) to the changing environment: Kisumu study area" Proc. 8th Ann. Med. Sci. Conf. Marangalla, G. M., Obala, A. A., Serony, I. K. and Ondijo, S. O. (1989) "Host preferences studies on malaria vectors",Proc. 9th Ann. Med. Sci. Conf

[176] Owaga, M. L., Wagesa, P. and Kaliech, P. M. (1980) "Sensitivity test of Plasmodium falciparum to chloroquine in Nangina: Busia District" Proc. 1st Ann. Med. Sci. Conf.
Oloo, A., Ownanga, M., Kamunvi, F., Watkins, W. M. and Spencer, H. C. (1984) "In-vivo Plasmodium falciparum susceptibility to chloroquine in Kisumu Area, Western Kenya" Proc. 5th Ann. Med. Sci. Conf.

[177] Owanga, M. L., Wagesa, P. and Kamunvi, F. (1981) "The problem of malaria diagnosis in rural health units and its implications for the health service in Kenya" Proc. 2nd. Ann. Med. Sci. Conference.

[178] Kamuniv, F. and Otieno, L. S. (1985) "The value of periodic working visits to the rural area health centres of specialised physicians, specialist public health scientists and researchers with laboratory backup" Proc. 6th Ann. Med. Sci. Conf.

[179] Serony, I. K., Kamunvi, F. and Obudho, W. O. (1985) "A possible model for monitoring malaria vectors and its application to the surveillance and control of malaria in urban areas: Kisumu Municipality case study" Proc. 6th Ann. Med. Sci. Conf.

[180] Attention is given here to the first two because there was a quick succession between the first and second directors due to illness. However, it was important to consider the ideas of both Directors as they were both integral to the setting up and planning of this research institute.

African scientists of the 1970s in Kenya had a range of professional experiences – some had worked during colonial times under British rule, while others, mainly younger scientists, embraced the new-found opportunities following independence. On a personal level, all had experienced the shift from colonialism to independence.[181] Before the collapse of the EAC, in the late 1960s, Kamunvi and Wagessa, the first two directors of MOPDRC, went to London to be trained at the London School of Hygiene and Tropical Medicine (LSHTM). They then returned back to East Africa, as directors and secretaries, on completion of their diplomas. Wagessa had made his career at the malaria research institute of the EAC based in Tanzania. Originally from Kenya, he made an obvious choice as the first director of MOPDRC. Kamunvi, originally from Uganda, had reached the prestigious ranks of secretary of the EAMC, prior to the collapse of the EAC. While Wegessa was the first director of MOPDRC, after he became ill, Kamunvi took over as director. Therefore, insights from both early stage directors of this research institute are drawn from in this chapter. Wagessa never fully recovered from his illness and passed away in 1996. Kamunvi, after leaving MOPDRC following a number of years of service, now lives back in Uganda and was unable to be contacted. This means that unfortunately neither director contributed orally to this project. However, staff members who worked with the directors were interviewed and also the widow of Wegessa was interviewed twice. This chapter depends heavily on informal documents still held in the research institute, and records given to me by the family and friends of the directors.

Now I turn to the ethos of the directors with regards to the organisation of medical research, this section is more largely drawn from Kamunvi's ideas due to the extensive papers he left behind on this topic at the research institute. In 1983, in one of the papers, typed up on now faded thin paper, Kamunvi reflected upon the organisation of the EAMC, which he had been the secretary of. In this paper Kamunvi applied his thoughts to the situation for research in Kenya, textually sorting between the pros and cons of various approaches. Within his paper, Kamunvi appeared to

[181] For a rich discussion of the contradictions of colonial rule and frustrations of independence from the perspective of those living in Western Kenya see Mutongi, K. (2007). Worries of the Heart: Widows, Family and Community in Kenya University of Chicago Press

value the role of reflection through history, categorising certain practices as into the past, in order to formulate thinking about the future of research in East Africa. '*What is of importance to us is how to learn from our past errors and constraints as we face new challenges before us.'*[182] There were certain aspects of the EAC that Kamunvi categorised as into the past. In the following extract from his paper, he discusses a foremost challenge from his perspective, which was the ways in which East Africa institutions were being undermined:

> *One rather disappointing aspect of the institute's work was that its findings had been put into practical application outside the East Africa rather than within East Africa. There could be many reasons for this but one was apparent and in the director's view there was still a tendency among government officials to mistrust their own experts. They still thought that anything good must come from a foreign country. It was therefore not uncommon that one of the governments had mounted a research project assisted by foreign funds and personnel on a problem that had been investigated and completed in East Africa and by local people a long time ago. IT was also common for the Government to seek advice abroad on a problem that fell within the competence of one of the East African research institutions.*[183]

Here we can see that for Kamunvi, writing in 1983 the challenges for East African research institutions were the involvement of foreign researchers and the mistrust of East African researchers even by their own government. However, when considering the future, Kamunvi, felt that there was scope for change. He argues that:

> *The ultimate object of research organisation is that of applying new knowledge and techniques. This depends on the functional relationship between the scientists, technicians and those with local authority, and also on the attitude of mind of the people whom a new method will benefit. But most important is to ensure that research and service i.e. extension work should not be too divorced from each other. Measures are always necessary to avoid wastage of research.*[184]

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[182] Dr. Kamunvi, Malalaria and Other Protozoal Diseases Research Centre, General Observations on the Reorganisation of Centres and Their Mandates, 1983, Kisian Archive, Kenya

[183] Dr. Kamunvi, Malalaria and Other Protozoal Diseases Research Centre, General Observations on the Reorganisation of Centres and Their Mandates, 1983, Kisian Archive, Kenya

[184] Dr. Kamunvi, Malalaria and Other Protozoal Diseases Research Centre, General Observations on the Reorganisation of Centres and Their Mandates, 1983, Kisian Archive, Kenya

On the topic of appropriateness and wastage of research, Kamunvi was very concerned with the way in which science was utilised. He observed that:

> *…the fact remains that the gulf between the acquisition of new knowledge and its application in the process of development remains one of the deepest which needs to be bridged. This is the major task that lies before us here and which I hope that will receive appropriate attention in all our programmes. For instance a great deal of knowledge already exists about many disease problems but it is not being used to full advantage. Sometimes this is due to knowledge not being readily available to those who take administrative or political decisions. But more often it is due to the immense practical difficulties met by the worker in the field, in introducing new systems to the human, biological and physical environment.*[185]

Here I have aimed to convey a sense of MOPDRC that came from reading hundreds (thousands) of documents on the setting up of this research institute. In summary, it appears through the textual documents, that the Centre was a mixture of excitement, of grand plans and buildings, with the first time that it appeared the Kenyan Government, through the NCST was going to commit to research in and for Kenya. This hope and excitement appeared to go alongside a consistent frustration with lack of facilities. Overall there appears to be an ethos and will of doing economic, appropriate science, with the aim of working towards development in Kenya, through the work of the Centre and local and international collaborations. It also gives a sense of local, applied work building upon the existence of local knowledge already there and not used.

6.3 Working in Nyanza

Chapter 5 described the differences between the various branches of KEMRI on the basis of the way in which they were funded and also scientific remit. We saw that MOPDRC was different on the basis of being the only research centre to be funded solely by the Kenyan government. However this wasn't the only way that this

[185] Dr. Kamunvi, Malalaria and Other Protozoal Diseases Research Centre, General Observations on the Reorganisation of Centres and Their Mandates, 1983, Kisian Archive, Kenya

research centre differed. Unlike some of the other branches of KEMRI, this branch was not built in the capital but built in Kenya's third city, Kisumu in the west of the country, as illustrated in the following table 2 and figure 16.

TABLE 2 LOCATION OF KEMRI RESEARCH INSTITUTES

Location	Research Centre
Alupe, Busia, Western Province	Alupe Leprosy Research Centre
Kisumu, Nyanza Province	Malaria and Other Protozoal Diseases Research Centre
Nairobi, Central Province	Headquarters
	Tuberculosis Investigation Centre
	Virus Research Institute
	Medical Research Centre
	Clinical Research Centre

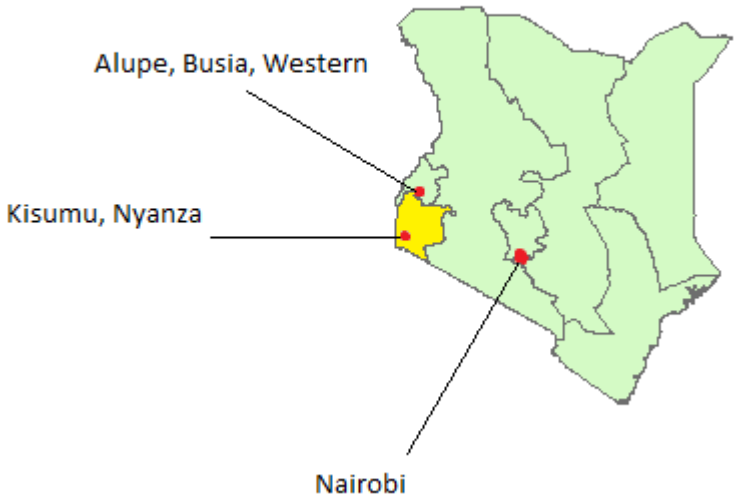

FIGURE 16 MAP OF KENYA HIGHLIGHTING NYANZA PROVINCE

We can see that MOPDRC was the only new research centre to be built with the initiation of KEMRI outside of the capital Nairobi. As displayed on the above map, the only other research station outside of Nairobi was is the Alupe Leprosy Research Centre. However this branch of KEMRI had been inherited from the East African Community, so there was no conscious decision by staff at KEMRI to build it outside

of Nairobi. Scientists at MOPDRC used this to their advantage. The positioning of MOPDRC in Kisumu was described in the public documents as positioning the Centre in a unique place, given that it was outside of the capital, emphasising the rural location in contrast to other research institutes in Kenya.

> *With its location away from the major establishments of scientific activity such as the University Medical School and other regional and international research bodies in and around Nairobi, the Centre has started to face squarely the challenge to delineate and study the problems of health and disease in those major areas that affect the cultural, social, physical, mental and economic welfare of the rural communities in the country.*[186]
>
> *Its location offers the excitement and legitimate reward to a committed scientific community of reviewing these problems from an entirely different background and horizon, that of a rural orientation in which about 90% of the population of Kenya share, work and live*.[187]

As becomes clear from stories coming from the research institute, there was an awareness that Kisumu was a particular place within Kenya in the west of the country further away from centralised forms of power than other research institutes. The Director, Kamunvi, expressed his thoughts and concerns about the placing of research and centralisation in a report in 1983.

> *The impact of some of the most vital support services such as Library, Medical illustration etc is hardly felt by centres outside of Nairobi. Their centralisation or otherwise should be discussed particularly as to where their services are more urgently needed: in Nairobi or outlying units. We should also bear in mind that 90% of Kenyans live within the rural areas and that is where most of the disease situation KEMRI investigations exist.*[188]

Given that this research was not in Nairobi, the capital, it was considered to be in a particular position to enact the aims of the NCST, described in Chapter 5. As described in Chapter 5, the philosophy of the NCST was based on the notion of science being intended for all the people of Kenya '*The science policy is designed to ensure the rural-urban balance, the even development of the various regions of the*

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[186] The Kenya Medical Research Institute, First Report, 1982 p. 86

[187] The Kenya Medical Research Institute, First Report 1982p. 87

[188] Dr. Kamunvi, Malalaria and Other Protozoal Diseases Research Centre, General Observations on the Reorganisation of Centres and Their Mandates, 1983, Kisian Archive, Kenya

country, the equitable distribution of wealth, and self-reliance.'[189] As well as the research institute being built in a particular position in the country, it was also being built from scratch. This makes the story of the imagined future of this post-colonial research institute a particularly interesting case study to follow. Staying with the location but thinking more locally, this section considers how the scientists began to build the grand plans they had for post-colonial science in Kisumu.

Originally the research institute was based in the disused laboratory of a local public hospital, in the town centre of Kisumu. It appeared from reading the documents that the Centre had various sections, such as entomology, parasitology, protozoology, animal, illustration and library. The extent to which these were physically demarcated spaces is hard to determine from the documents, but it appears that these may have been theoretical distinctions as opposed to demarcations in practice in the laboratory. This is because, in the documents, the space was often referred to as a '*three-in-one laboratory*', due to the many different tasks conducted in the small space.[190] There were discussions in the documents as to the way in which the lack of space was hindering the ability to conduct research. From the onset it was known that more space was needed. After deliberations and discussion it was decided that the researchers needed to move out of the city into a slightly more rural area, where there would be land available.

The acquirement of land entailed collaboration with local politicians. In order to acquire this land, the scientists liaised with local politicians, town planners and surveyors. The building of such a research institute was well received by local politicians; both on the grounds of local employment and health concerns.[191] In terms of employment, there had recently been high levels of unemployment in the area. When it comes to industry, during the 1970s, Kisumu was a thriving town, with

[189] National Council of Science and Technology, Kenya National Paper for United Nations Conference on Science and Technology for Development, 1978, BY1 214 NCST, Kenya National Archives, Nairobi.

[190] Malaria and Other Protozoal Research Centre, Staff Meetings General: Progress Reports from all Sections, 1981, Kisian Archive, Kenya

[191] Malaria and Other Protozoal Diseases Research Centre, Site for the Development of the Malaria and Other Protozoal Diseases Research Centre, Kisumu, Summary of a Meeting of Departmental Representatives, 1982, Kisian Archive, Kisumu, Kenya

the busiest port on Lake Victoria, due to East African trade on the lake with Tanzania and Uganda. Yet with the collapse of the EAC, trade between the countries decreased and, as a result, Kisumu as a port town economically suffered.[192] As a result, local politicians in Kisumu, who were concerned with issues such as unemployment, were behind the setting up of a research institute. Dr Ouko attended the planning meetings and reviewed the progress of the project. Dr John Robert Ouko (1931-1990) was the Foreign Minister for Kenya between 1979 and 1983 and also the local MP for 'Kisumu Rural'.[193] Aware of high levels of unemployment in the area, he was keen for a research institute to arrive in the area as a source of employment for the local people in Kisumu Rural.[194]

When it came to health concerns, it was well known amongst the city administration that malaria was a local concern. Being located next to Lake Victoria, the surrounding area was a large breeding ground for mosquitoes.[195] However, the high levels of malaria and health issues of the area cannot be depoliticised. Historians have noted the lack of public services allocated to Nyanza Province since political independence.[196] Visible in crucial services such as the road infrastructure, this was particularly pronounced in health services.[197] This meant that there were high levels of disease in Nyanza, and especially malaria. In the Nyanza Province 1979 Ministry of Health report, it was written on the topic of malaria that:

> *…this is a disease which continued to be highest in attacking thousands and thousands of people of all ages in every district in Nyanza Province as…In spite of efforts to control it, this disease seems to be coming a natural one for the Nyanza people. It is hoped that in future years something will have to be discovered which could minimise its effectiveness or nuisance in this province.*[198]

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[192] Ndege, G. O. (2001). Health, State and Society in Kenya Rochester, University of Rochester Press

[193] Cohen, D. W. and E. S. Atieno Odiambo (1990). The Risks of Knowledge: Investigations into the Death of the Hon. Minister John Robert Ouko in Kenya USA, Ohio University Press

[194] Malaria and Other Protozoal Diseases Research Centre, Site for the Development of the Malaria and Other Protozoal Diseases Research Centre, Kisumu, Summary of a Meeting of Departmental Representatives, 1982, Kisian Archive, Kisumu, Kenya

[195] Oloo, A. J., et al. (1996). "Some emerging issues on the malaria problem in Kenya." East Afr Med J **73**(1): 50-53.

[196] Ndege, G. O. (2001). Health, State and Society in Kenya Rochester, University of Rochester Press.

[197] Ndege, G. O. (2001).

[198] Nyanza Province, Ministry of Health Report 1979, Kenya National Archives, Nairoibi, Kenya

We can see from this section that, due to a number of factors, the building of a national malaria research institute in Nyanza Province in the late 1970s made sense from a local political perspective. There was a qualified director happy to move back to Nyanza and set up from there. There was the political infrastructure at a national level and there were also high levels of disease in the area. Therefore, the decision to build a research institute for malaria in Kisumu was appropriate on epidemiological, public health and political grounds. Exploring the labour involved in setting up the new research institute helps to make visible the multiple ways in which the research institute was linked to the city and surrounding area. This helps to stretch out the notion of 'locally appropriate science' by exploring further the social life of the scientific practices, where attention is paid to how the infrastructure of the institute was envisioned to fit in with the place, and also the limited extent to the way in which there were plans for international collaborators.

The acquirement of land also involved liaising with people living on the ancestral land. Nyanza was an area where land was in high demand, yet which also held great generational significance. Shipton has written an ethnography of the significance of ancestral land to people in this area, called 'Mortgaging the Ancestors'.[199] It was Dr Ouko who was the first person to inform the people living on the land in Kisian that there were plans to build a research institute in this location. There was a mixture of feelings in response to this prospect for people who were living there. For some it created excitement, as the arrival of a research institute was thought to bring a solution to the issues of high unemployment in the area. However, this also meant that they would need to move from their ancestral land, which they had grown up on, and were also using the area to grow vegetables and cassava and for the grazing of their animals.[200] Yet amongst people living in the area, there was an undeniable awareness of the levels of unemployment and presence of malaria, both of which it was assured in writing to these people that would be tackled by the presence of the research institute, in addition to monetary compensation for the land that they were

[199] Shipton, P. (2009). Mortgaging the Ancestors: Ideologies of Attachment in Africa Yale University Press

[200] Report of the Proceedings of the Second Meeting of the Steering Committee of the Malaria and Other Protozoal Diseases Research Centre, 1982, Kisian Archive, Kisumu, Kenya

giving over.[201] Finally, on 25th of January 1983 '*the site at Kisian was formerly handed over to Kenya Medical Research Institute by the District Commissioner*'.[202]

Overall, in addition to the political will and the notion of building a research institute, the section has shown the way that the building of the research institute also tied in with the hopes and aspirations of people living in the area locally. So while, in part, the will came from bringing sources of employment, there was also an awareness of the extent of malaria in the local area. The historical background to the acquisition of the land shows the justification for the building of the research institute in such a place, and the reasons behind it for particular groups. It also showed the way in which the building of such a research institute meant that the plans of the institute were closely tied with the local political context.

6.4 Going back to the malaria research

As well as the acquisition of the land to build the research institute, the way in which the research was conducted meant that it was highly collaborative with local sectors such as industry and hospitals. To give further detail, three of these studies are discussed in-depth because they illustrate the way in which knowledge was generated about the place; one is an interesting example of a local public-private partnership, another which planned on surveying the city, and the third an example of a sociological approach to the study of malaria. In addition to looking at what the scientists wanted to know, the section also looks in depth at the approaches that scientists took in order to come up with the research questions they wanted to ask. How did the scientists interact with the specific context in order to formulate the relevant research questions?

First I focus on the local public-private partnership. This was set up in collaboration with a local sugar factory and looked into malaria and social change. The origins of this study came from the clinical officer of the factory inviting staff to look into the

[201] Malaria and Other Protozoal Diseases Research Centre, Site for the Development of the Malaria and Other Protozoal Diseases Research Centre, Kisumu, Summary of a Meeting of Departmental Representatives, 1982, Kisian Archive, Kisumu, Kenya

[202] Dr. Kamunvi, Progress Summary on the Developmental Activities for the Malaria and Other Protozoal Diseases Research Centre, 1983, Kisian Archive, Kisumu, Kenya

problems of malaria and diarrhoea in the area. There was close collaboration between the local sugar factory and the scientific research institute. This can be illustrated through the shared architecture for conducting the study. In terms of scientific infrastructure, during the initial pilot study, a temporary laboratory had been put up at the Sony Sugar Factory, while most of the analysis was done at "*our centre's laboratory in Kisumu.*" In each area being studied, 10 houses were to be used as "*catching stations*".[203] Given the employment of local staff, the sugar factory had a stake in the health of the local area, which was a motivation for collaborating with the local research centre. It is interesting to look in depth at what it was that the scientists decided that they wanted to ask about malaria and protozoal diseases. We know through history that there are many ways in which the disease of malaria can be approached.

The objective of this study was comparative, to compare the activity of malaria vectors (mosquitoes) in areas of different agricultural activities. This location was chosen because of an awareness of the links between malaria and the environment and industry. The location – Awendo - had recently grown from a rural peasant farming area to a major sugar growing area. This led to what was described as three distinct ecosystems which were designated for the purposes of this study as 'nucleus, outgrowers and undisturbed'.[204] Kaumvi, the then director of KEMRI–KSM, in 1985 explained the importance of this study: 'the sugar industry in agriculture in Kenya is one of the major socio-economic ventures and the importance of monitoring and understanding the malaria vectorial activities in this sector of our economy is an urgent important task'.[205] The pilot project became ongoing and was expected to be completed in 1983. At the site of the sugar study the scientists tied in their close

[203] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, A Pilot Study of Malaria Vectors in a Large Scale Sugar Growing Rural Area in Kenya, Presented at the 2nd Annual Medcial Scientific Conference of KEMRI, Nairobi, 1981, Kisian Archive, Kisumu, Kenya

[204] Kamunvi, F. (1981) A pilot study of malaria vectors in a large scale sugar growing rural area in Kenya In 2nd Annual Medical Scientific Conference of KEMRI/KETRI Nairobi, Kenya

[205] Kamunvi, F. (1985) Research Status in Malaria: current positions, future proposals and drug sensitivity of malaria In Kenya Medical Association Round Table Meeting on 'Clinical and pharmacological experiences in the treatment of malaria' Kisumu

exploration of the local area with the biomedical knowledge. Regarding malaria, the scientists decided to explore the relationship between malaria vectors (mosquitoes) and the social change going on in this area. The location of the study was suggested as of particular interest because

> *It has recently grown from a peasant rural farming area to a major sugar growing area. These recent developments in the area have three very interesting and almost distinct ecosystems established which we have designated as nucleus, outgrowers and undisturbed.* [206]

Within the protocol, the scientists described these three distinct locations, paying attention to the compensation offered to those living on the land; the population; the fertility of the land; what people ate and farmed – '*maize, beans, sorghum, bananas and cassava*'; the animals they kept; and the streams that provided the source of their water.

The second of these studies was a proposed project to evaluate the Kenya national malaria control project. This study was planned with the objectives of applying current knowledge of malaria control to the Kisumu municipality. The objectives of this study were to try and develop a practical tool for active surveillance of malaria in urban areas; *'this study is planned with the objective of examining the problem of malaria and the study of application of some of what is known today in the control of malaria in an urban setting.'* The perceived outputs of this study were to develop a method for evaluating the malaria situation and its control, to develop a continuous malaria endemicity bank for Kisumu municipality, and finally, to assess the applicability of such a model in different urban areas and situations in Kenya. [207]

The third study proposed within the rural areas was one on the 'social and cultural determinants of malaria'. The aims of this study were to look into the social factors involved in malaria in rural areas, to '*increase the effectiveness of malaria*

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[206] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, A Pilot Study of Malaria Vectors in a Large Scale Sugar Growing Rural Area in Kenya, Presented at the 2nd Annual Medcial Scientific Conference of KEMRI, Nairobi, 1981, Kisian Archive, Kisumu, Kenya

[207] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, A Possible Model for Malaria Surveillance in Urban Areas: Kisumu Municipality, Kisian Archive, Kisumu, Kenya

control…formulate feasible interventions…decide on resource allocation…[and] identify possible high risk groups'.[208] Reference was made to the WHO Special Programme for Research and Training in Tropical Diseases. The above aims illustrated the way in which the aims of the science fitted into the objectives of the WHO at the time. However what was interesting was the way in which the rationale of the study gave light to some of the scientists' personal interests. The rationale of the study was an '*attempt to determine whether the disease tend to be generated in adverse social surroundings. Second whether persons who succumb to malaria repeatedly drift into successively lower occupations during the years following. This has been observed in certain conditions and relate to what has come to be referred to as the Social Drift Theory.'*[209] In summary there were ideas being created of plans for a research institute that was locally appropriate, and the questions asked were inductive of the context in which they were working. They were also linked to the broader determinants of health, beyond the biomedical to include the environment and occupations.

As well as collaborating with local industry, another way in which research was considered to be generated was through close collaboration with the Nyanza General Research Committee (NGRC). Kamunvi was also the chair of this local research committee. Set up in 1981, this consisted of consultants of the local Nyanza General Hospital. The research projects were planned by local medical staff such as anaesthetists, dentists and pediatritions, which had the aim to '*promote new knowledge in disease patterns in Nyanza Province and also provide solutions to them'.*[210] The committee would source funds to study these projects from the NCST (described in the previous chapter). At the meetings, Kamunvi encouraged the NGRC to get '*much more involved in research'.*[211]

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[208] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, A Study of the Social and Cultural Determinants of Malaria Among Rural Communities in Kenya, Kisian Archive, Ksiumu, Kenya

[209] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, A Study of the Social and Cultural Determinants of Malaria Among Rural Communities in Kenya, Kisian Archive, Ksiumu, Kenya

[210] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Letter to all members of the Nyanza General Provincial Hospital, 1981, Kisian Archive, Kisumu, Kenya

[211] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Letter to all members of the Nyanza General Provincial Hospital, 1981, Kisian Archive, Kisumu, Kenya

This section describes some examples of the ways in which the research institute collaborated with local stakeholders in order to formulate and generate research questions and find study sites. In looking at the correspondence and proposals for the research institute, it becomes apparent that there was a lot of local collaboration in generating research questions and also research sites. It also illustrates the way in which the research was tied to the local setting in a way in which previous research had not been. For example in terms of the outcomes, Kamunvi had described the way in which, during the EAMC, the research was often applied elsewhere. Here we can see the way in which the researchers were planning a new philosophy of medical research where it was tied in with the local context.

6.5. BUILDING THE HOPE AND EXPECTATION

The acquirement of land and the building of a new research centre created excitement amongst the staff members. Research institutes can take many different forms and directors can choose to put emphasis on many different aspects involved in the practice of science. We saw in Chapter 5 that other East African research institutes inherited by KEMRI were already built and the scientists had to make do with what they had. Or, in contrast, the research institutes were set up and heavily-funded by foreign sources either coming from Japan or the US. However, this research institute was set up by East African scientists and the initial funding for the research institute came from the Kenyan Government. Therefore, following the discussions surrounding the building of the research institutes is a valuable entry point for capturing the aspirations of the post-colonial national science being imagined in this specific context. While the previous sections in this chapter looked at the science that was planned at the research institute, this section explores the 'auxiliary' aspects of the research institute. Attention here is not on the laboratory of science, but instead the broader add-on aspects to the research institute which the directors considered to be important in order to be able to enact the science that they wanted. So here, attention is given to the library, guest house and field station of the research institute, described here because they were integral to the hopes and imaginations of the first directors.

In the early stages of MOPDRC, the library was envisioned by the directors and staff

members as having a central role in the research institute. Looking through the documents of the setting up of MOPDRC, it became apparent that the role of the library was considered to be of significance both to the staff members and the Director. Therefore, the library became for me not only a physical research site as a source of empirical material (as described in Chapter 4), but also a narrative; a narrative about the significance placed on the role of the library over time. Kamunvi would hold meetings in the library of the research institute. The intricate descriptions of the goings-on of the library in the early years showed that it was both a place of mundane roles of cataloguing, administering and photocopying while also a site for display, which connected various groups linked to health in Kisumu city and beyond. In expression of the seriousness of the development of the library, the librarian was sent to libraries in Nairobi, the capital for a '*hint of the management of library procedures.'* [212] The requests and plans for the library evoked an image of a resourceful site of learning and knowledge sharing for the staff. The seriousness taken of the library by Kamunvi was felt by the staff members. As the librarian wrote '*I end up by so saying that what the Ag. Head has done in instituting the library of the centre is a great achievement to us, and Malaria staff. Let us make use of the library for education has no end to a living human being.'*[213] In advance of the move to the new centre, the librarian expressed excitement '*we should buy more chairs for users not to sit on tables or share chairs…we should also buy curtains for the library has become a centre for meetings, lectures and honourable visitors.'*[214]

In addition to being considered to be of great value to the research institute staff members, the library was also conceived of as being of value to the locality beyond specifically being for the researchers based there. The library was also used by others such as the local Public Health Officer and Provincial Medical Headquarters. The library housed local meetings such as the committee meetings of the Nyanza General

[212] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Staff General Meetings, Progress Reports from all Sections, 1981, Kisian Archive, Kisumu, Kenya

[213] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Staff General Meetings, Progress Reports from all Sections, 1981, Kisian Archive, Kisumu, Kenya

[214] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Staff General Meetings, Progress Reports from all Sections, 1981, Kisian Archive, Kisumu, Kenya

Hospital Research Committee, described above.

The emphasis on the library continued in the early years of the research institute. In 1985, Masters of Public Health students from the University of Nairobi, Department of Community Health, visited Nyanza. The students wrote up a report of their visit, which I found in a box in the library, this included descriptions of the library in the 1980s:

> *Dr.Kamunvi gave a conducted tour of facilities. Of particular interest to students was the library, which by most standards, is small, and as explained by Dr.Kamunvi "only beginning". However, it contained the widest selection of books and periodicals most students had seen to this date…Both students and teachers were delighted with Dr.Kamunvi's enthusiasm in his work and his eternal youth as he rushed from one corner to pick up an interesting book to illustrate a graph to another to show students what was going on.*[215]

The extract of this report offers a sense of the library at the time. It also interesting to note that the library was considered to hold such a wide selection of books even by the standards of students visiting from Nairobi, the capital city. What this section has shown is that the library was considered to be a core part of the research centre from the point at which it was initiated. As well as being a library, this was also planned as being integrated with a visual department. The visual department was for scientific illustration, photography and cartography, for which the Centre had a Cannon camera and a micro-photographic camera. Staff were also sent to other centres in Kenya in order to be trained in photography, illustration and cartography.[216]

Alongside building a larger research station on the piece of land, there were also plans to build a guest house. This guest house was going to house international scientists who were going to visit the Centre. It was a resourceful site, where there would also be trees, flowers and a '*vegetable garden*'.[217] This vegetable garden was going to be used to feed the people staying in the guest house and also the animal

[215] University of Nairobi, Site Visit to Kisumu Report, Masters in Public Health, 1985, Kisian Archive, Kisumu, Kenya

[216] The Kenya Medical Research Institute, First Report, 1982

[217] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Memorandum for the Malaria and Other Protozoal Diseases Research Centre Guest House Management Committee, 1982, Kisian Archive, Kisumu, Kenya

house (for the animals used in research). In the documents, the building of the guest house was considered a '*major project and will take some years to develop…Such premises should offer an attractive working and residential environment for research scientists of the Centre, especially visiting ones.'*[218] The plans for the guest house were that it would host '*visiting scientists'.* [219] This guest house was going to house international scientists who were going to visit the Centre. The plans for the guest house further integrated the research station into the city with a committee for the guest house being set up selected from '*senior civil servants and other senior residents of Kisumu.'*[220] Invitations to serve on the committee were sent out to the Director of the British Council in Kisumu, Provincial Medical Officer, Provincial Auditor, District Commissioner and the Town Clerk.[221] The guest house appeared to be symbolic of aspirations for international collaboration but at the same time aspirations for high reputation and status within the international community. So while a local project it, MOPDRC was also planned to be international in terms of reputation and what they had to offer and teach.

In addition to the guest house, there were plans to expand the research station to have field stations across the country '*To facilitate operations throughout the Republic it is necessary to have functional field stations located in various parts of the country…it is proposed to open at least one field station in every province.'*[222] It was envisioned that '*each field station will have one working laboratory, with at least one senior, four medium and six junior residential houses.'*[223] In preparation for these field

[218] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Memorandum for the Malaria and Other Protozoal Diseases Research Centre Guest House Management Committee, 1982, Kisian Archive, Kisumu, Kenya

[219] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Memorandum for the Malaria and Other Protozoal Diseases Research Centre Guest House Management Committee, 1982, Kisian Archive, Kisumu, Kenya

[220] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Memorandum for the Malaria and Other Protozoal Diseases Research Centre Guest House Management Committee, 1982, Kisian Archive, Kisumu, Kenya

[221] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Memorandum for the Malaria and Other Protozoal Diseases Research Centre Guest House Management Committee, 1982, Kisian Archive, Kisumu, Kenya

[222] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Staff General Meeting: Progress Report, 1981, Kisian Archive, Kisumu, Kenya

[223] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Organisation and Work Programme of the Malaria and Other Protozoal Diseases Research Centre, 1979, Kisian Archive, Kisumu, Kenya

stations, staff at MOPDRC began training staff to work in field stations '*at the moment, two officers are undergoing 'on-the-job' training at Kisumu aimed at taking charge at Webuye Sub-Station in the near future'*.[224]

It was planned that co-ordination of these field stations would involve a lot of transportation:

> *A substantial amount of travelling will be undertaken in carrying out surveys and collection of study materials from many areas. It will be necessary to station at least one landrover at each field station to enable personnel station at each of these stations to carry out useful operations. Another set of five landrovers will be stationed at each of these stations to carry out useful field operations. One small bus to carry a fair number of workers at times when a fairly large team of workers are required. One staff car will certainly be necessary for normal staff duties. A fleet of bicycles will be required for various operations requiring a single operator at a time in various villages. Finally, we shall need at least one five to ten ton lorry for heavy duties.*[225]

What is evoked through the descriptions in the documents of the guest house and the field stations is that this was very much a national project. While there were plans to host visiting researchers, it was envisaged that these visiting researchers would visit and share knowledge and teach. It was a very different arrangement to the colonial context of the research stations being headed by the British Administration. For the first time there were plans for Kenyan science. There was great excitement surrounding this: '*The creation of a firm and optimum infra-structure for laboratory and field staff at the centre (now in exercise) cannot go without mention. The main reason is to uplift the academic, professional and technical working morales of our different cadres of our personnel.'*[226] This was something that previously had not been possible to imagine in the history of Kenya. While this section has described the infrastructure of the research institute, the next section describes the way in which

[224] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Organisation and Work Programme of the Malaria and Other Protozoal Diseases Research Centre, 1979, Kisian Archive, Kisumu, Kenya

[225] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Organisation and Work Programme of the Malaria and Other Protozoal Diseases Research Centre, 1979, Kisian Archive, Kisumu, Kenya

[226] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Staff Meetings General: Progress Report from Al Sections at MOPDRC, 1981, Kisian Archive, Kisumu, Kenya

this ethos was put into practice through the scientific questions the Centre scientists wanted to ask about malaria.

6.6. The broader post-colonial context

We saw in the previous chapter that on a national level there had been the political reorganisation of science in Kenya. There was the setting up of the national research institute, KEMRI, under which MOPDRC was a branch. It was the first time that biomedical research was being organised within the geographic remit of Kenya. The previous sections have explained the national and local level factors that worked in favour of the setting up of a malaria research institute in Nyanza Province. We saw that there was on some levels the political will at a national level and also a qualified Director to take on the task. In addition to this there were local reasons specific to Kisumu that also enabled a research institute to be built there. This means that it was possible for the scientists to conceive of this being a time that they could plan for doing science that was appropriate for the context in which they were working. We have seen from the above sections an insight into what these plans were hoped to be. There was excitement shown in the plans for a library and a guest house. These plans for science were also tied in with local industry and with a concern for the local economic and social contexts. However, at the same time, there were also a number of reasons why building such a research institute was also a hard task at the time. It is these factors that are described in this section.

6.6.1. The tight corners: staffing

The first issue to discuss here is that of staffing. While earlier in this chapter we have read that there were a few highly trained East African scientists who had built up successful careers during the colonial period, on the whole this was the exceptions. Overall there were serious issues with the availability of bio medically trained staff.

> *'…operation of the Centre's research are much curtailed by the relatively underdeveloped laboratory and scientific research manpower facilities.'*[227]

One of the key problems for the setting up of a research institute was the lack of appropriately trained staff. Despite there being some highly trained scientists, such

[227] Kenya Medical Research Institute, First Report, 1982

as Wegesa and also his predecessor Kamunvi, there was also overall a lack of biomedically-trained scientists in the local context at the time. This meant that desires for staffing were a lot higher than what was possible to achieve. The exact numbers of staff working for the Centre in the early years has been hard to determine. Their backgrounds and experience with research varied; they were a staff of with a variety of experiences including ex-EAC employees, Kenyan Ministry of Health Workers and fresh school leavers. What is clear is that the number of staff members was way below what was necessary to staff MOPDRC, as illustrated in the following (table 3) which comes from a table in a conference paper written in 1979.

TABLE 3 STAFF REQUIRED AT MOPDRC IN 1979

Designation	No. available	No. required	Total
Director	1	-	1
Deputy Director	-	1	3
Medical Research Officers	-	3	-
Parasitologists	-	3	3
Entomologists	1	1	2
Epidemiologists	-	2	2
Lab. Technologists	1	21	22
Lab. Technicians	6	16	2
Field Officers	2	7	9
Field Assistants	1	8	9
Supporting Staff	2	32	34
TOTAL	14	94	108

[228]

[228] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Organisation and Work Programme of the Malaria and Other Protozoal Diseases Research Centre, 1979, Kisian Archive, Kisumu, Kenya

It is clear from this table that the estimates hoped for by the Director in 1979 were well below that which was available. The concerns surrounding staff were expressed in conference chapters and there were plans for local collaborations:

> *All the laboratory staff, with the exception of one fresh University Graduate from Nairobi, are those inherited from the former E.A.C. institutions in Amani, and TRPI in Arusha.*
>
> *It is quite clear that we need a very energetic co-ordinated recruitment programme to enable the centre to go into full operation. This may include direct recruitment from the local market, technical assistance from outside and transfers of staff from existing set ups in the Republic*[229]

The Director considered ways in which there could be more staff in ways that fitted in with the local context:

> *A clearly defined training programme for research personnel is required. The present MTC curriculum is turned towards clinical practice and as such, its graduates don't fit directly into medical research practice as technologists. Most use will have to be made of the Kenya Polytechnic which offers courses in both medical science and laboratory technology. This however caters for laboratory technicians and technologists only.*
>
> *Currently there is no system or set up that offers post-graduate professional training to medical and science graduates. Previously we have relied on utilising facilities offered abroad for such training. We may have to continue this practice until such time these facilities are made available here. The proposed M.S.c. in Medical Science at the University of Nairobi will come in very useful in this respect when it is established.*[230]

During the colonial context there had been a reluctance to allow Africans in to formal education.[231] This resulted in a lack of trained staff. In addition to the understaffed situation of the of the research station, it is also clear from looking at the documents that, in order to set up the research institute, the scientists also had to occupy themselves with setting up the new centre. For the staff at the research institute it was also logistically very hard. There was a lot of labour that went into the setting up

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[229] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Organisation and Work Programme of the Malaria and Other Protozoal Diseases Research Centre, 1979, Kisian Archive, Kisumu, Kenya

[230] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Organisation and Work Programme of the Malaria and Other Protozoal Diseases Research Centre, 1979, Kisian Archive, Kisumu, Kenya

[231] Mutongi, K. (2007). Worries of the Heart: Widows, Family and Community in Kenya University of Chicago Press

of this new research institute that went beyond the usual remit of doing science. A staff member described the research institute when they arrived as "*…everywhere dark rust, nothing, no chair, nothing so we had to come in, scrub, wash the walls, wash the grounds.*"[232] It was these tasks that the scientists needed to be occupied with. The staff managed to get on with work but they remember it as being lacking in equipment "*after a short while we managed, we had one microscope then err they had some furniture and a type writer for the secretary, we began like that*".[233]

As stated earlier, by the time the group moved to Kisumu, the Centre was set up in a disused laboratory in an underfunded public hospital. It is important to note that, while the scientists had to build up a laboratory from scratch, this would have been a contrasting experience for scientists who had previously been working in the research stations of the EAC. This issue was raised by staff members during interviews when I asked them to describe the facilities at MOPDRC at the start, the ones who had worked for the EAC could not help but compare for in the EAC "*there was a lot because microscopes were many actually even those electronic microscopes used to be there…and so forth and so forth…it was a big institute.*"[234] So for the staff members who had come from a more highly resourced setting they remembered it as frustrating to have to start again from scratch.

6.6.2. THE TIGHT CORNERS: FUNDING

In addition to shortages of staff, finances were an issue at MODPRC and there were not sufficient funds for conducting the research and activities they wanted. There was certainly an awareness that the amount of funds available was limited; for example, in the minutes of the first senior staff meeting it was reported that:

Last years expenditure was 1.3 million, this year 1980 we have 4 million shillings to be shared by 8 medical research stations, therefore we have been constrained to spend as much as 800,000 KSh. Hence we should try to save as much as we can, eg.

[232] Interview with staff member, 15th October 2010, Nyanza, Kenya
[233] Interview with staff member, 15th October 2010, Nyanza, Kenya
[234] Interview with staff member, 15th October 2010, Nyanza, Kenya

Minimise trips as much as possible and everything should be used economically. By this we shall modify ourselves by tightening our belts.[235]

Advice from the headquarters of KEMRI was that research 'outputs' were given weight as a way of drawing on resources. Mugambi, the second director of KEMRI headquarters in Nairobi, attended one of the senior staff meetings at MOPDRC, where it was recorded in the minutes of meetings that '*He reminded scientists about the importance of their output in order to justify expenditure. He also stated that those centres with more research activities would naturally receive more financial and other resources.'*[236] Therefore writing protocols was seen as a way of drawing in funds. With KEMRI being a parastatal, the scientists were encouraged to draw on the finances that came from external sources, such as WHO; BOSTID (the science and technology board of USAID); IDRC; the Canadian International Development Research Centre; and the European Economic Commission. These were examples of funding bodies in the consciousness of the researchers.[237]

In addition to the concerns regarding the finances at the Centre, there was also a great amount of optimism expressed in the documents, making do with what was available '*we are now trying in our best capacity to make every attempt to maximise our production through a better economical utilisation of these limited resources*.'[238] An example in practice of the way in which the researchers attempted to be economical with the limited resources they had can be illustrated through the guest house.

In addition to being a site for hosting researchers, the guest house was also a site for illustrating the imagined self-sufficiency of the research institute. It was a resourceful site, where there would be trees, flowers and a '*vegetable garden'.* This vegetable

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[235] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Senior Staff Meetings, Meetings of the First Extraordinary Meeting of the Senior Staff Committee of MOPDRC, 1982, Kisian Archive, Kisumu, Kenya

[236] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Senior Staff Meetings, Meetings of the First Extraordinary Meeting of the Senior Staff Committee of MOPDRC, 1982, Kisian Archive, Kisumu, Kenya

[237] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Organisation and Work Programme of the Malaria and Other Protozoal Diseases Research Centre, 1979, Kisian Archive, Kisumu, Kenya

[238] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Staff Meetings General: Progress Report from all Sections at MOPDRC, 1981, Kisian Archive, Kisumu, Kenya

garden was going to be used to feed the guest house and also the animal house. For the animal section held guinea pigs, rabbits and mice, and the function of this section was to provide animals to the scientific sections for experimental purposes.[239] However, staff members manning the animal section commented on the way in which they dealt with feeding the animals amidst a context of limited resources.[240] In the documents there was continued reference to the concern regarding the diet offered to the animals '*to break the monotony in the diet of the rabbits, we are now trying to get cod liver oil to be added to the diet. The cod liver oil will also help in supplying both vitamins A and D to rabbits.'*[241] Therefore, the guest house was envisioned as a place which would contribute resources, through local growth, into the productivities of the research station. This also illustrates the interrelatedness of the research station, for it was reported that '*As a whole, the interrelationship between the Animal and Entomological Section is very much an intense one to the extent that a very small mess in the animal section has profound effect on the Entomology Section."*[242]

This section has described the broader structural context of the post-colonial situation of Kenya that meant that the staff of the research institute were working in 'tight-corners' through a history created not by themselves. Due to the structural inequalities of the colonial context, while a few highly qualified biomedically-trained African scientists were able to build their careers and be ready to take over post-colonial research institutes, they did not have a broader body of staff available to work with. In addition to the staff shortages, there were also limited resources available to be able to conduct the work they wanted to do at MOPDRC. In addition to this, the staff who were at the research institute and available to do science had to also occupy themselves with the labour of setting up a new research institute, and

[239] Kenya Medical Research Institute, First Report, 1982

[240] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Senior Staff Meetings, Meetings of the First Extraordinary Meeting of the Senior Staff Committee of MOPDRC, 1982, Kisian Archive, Kisumu, Kenya

[241] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Senior Staff Meetings, Meetings of the First Extraordinary Meeting of the Senior Staff Committee of MOPDRC, 1982, Kisian Archive, Kisumu, Kenya

[242] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Senior Staff Meetings, Meetings of the First Extraordinary Meeting of the Senior Staff Committee of MOPDRC, 1982, Kisian Archive, Kisumu, Kenya

work in highly economical ways if they were to conduct any science at all. While there were intentions of conducting nationally relevant science, they were being reminded by the headquarters of KEMRI that if they wanted to draw in funds they needed to start thinking about applying to foreign sources to get the money. So while this was a post-colonial research institute with excitement about conducting research, there also appeared to be an underlying awareness that potentially foreign governments were going to be depended upon in order to conduct this research.

6.7. SUMMARY

This chapter focuses specifically on MOPDRC, the malaria branch of KEMRI in Nyanza Province. Archival documents are used to analyse what futures of making malaria science were planned by the Kenyan scientists. The chapter also follows the infrastructure by looking at the architectural plans of the building of this research institute; paying in-depth attention to the building and the place in which it is located makes visible the practical concerns of building up a new research institute and laboratory in Kenya as a Kenyan in the 1970s. In making this visible, we see more clearly the intersection between the planning of science and the practical and political constraints of the time. Therefore, this chapter shows that while it was a time of being able to plan their own style of malaria research, these hopes were constrained by the structural context - local, national and global - of conducting biomedical research as a Kenyan scientist in Nyanza. It follows the way in which the building of this infrastructure linked the scientists in multiple ways with the local, national and international research context of the 1970s, from the perspective of Nyanza Province.

The MOPDRC was a scientific branch of KEMRI unlike the other branches because it was not initiated by foreign funds. In contrast to the other scientific branches of KEMRI, it was conceived of by East African scientists and it was initially funded by the Kenyan Government. This is why this branch is particularly interesting for exploring post-colonial science in East Africa. By looking at this particular branch it is possible to contextualise the science within the specific place in which it was being set up; tied to nation building post-independence. In following the plans for MOPDRC we are able to see the ways in which ideas of post-colonial science were enacted through

the building of the Centre, and the planning of the scientific projects envisioned by these East African scientists who were biomedically trained. This is why this branch was particularly interesting for exploring post-colonial science in East Africa.

We saw that it was a situation of local scientists conducting locally appropriate science. However, when we bring this back to the national context, we see that there were other branches of KEMRI which were working with a much higher budget, conducting international collaborations. When looking at the international context, the scientists needed to shift their local knowledge, to fit into broader, global research priorities. However, this chapter also shows that while it was a time of being able to plan their own style of malaria research, these hopes were constrained by the structural context, local, national and global of conducting biomedical research as a Kenyan scientist in Nyanza. Chapter 7 will further contextualise MOPDRC by looking at other medical research which was also going on in Nyanza.

CHAPTER 7. PLACING POST-COLONIAL TRANSNATIONAL SCIENCE

Chapter six described the setting up of a particular post-colonial research institute in Nyanza Province. On a national level it described the re-organisation of science in the 1970s and the specific national context of science in Kenya. It described the local context of this research institute and how this was tied into the local and national political context. Chapter 6 contextualised the national plans for science in Kenya described in Chapter 5 by looking at what it meant to build a national research institute in a particular place. However, Chapter 6, while sensitive to the specific context in which it was built, did not contextualise Nyanza Province with the global context of biomedical research in the 1970s. As this chapter will show, beyond the national plans in Kenya, Nyanza was becoming an increasingly interesting place for research by international research organisations.

This chapter further contextualises MOPDRC by describing other scientific studies going on in the same Province, but conducted and conceived of by non-Kenyan institutions. In doing so this chapter considers the setting up of the malaria branch of KEMRI in the context of an increasingly global context of doing medical research, especially since the Second World War.[243] In addition to showing that Nyanza was becoming increasingly popular to international researchers, this chapter also compares the ethos of MOPDRC, as described in Chapter Six, with the purpose and ethos of the first two large-scale biomedical studies conducted by transnational institutions in Nyanza Province following political independence of Kenya in 1963. This chapter considers how the studies differed to the science planned at MOPDRC.

Nyanza Province was not initially a particularly interesting place for foreign researchers to travel to. In the early 1900s, rather than being a place of research Nyanza became a crossing point. Scientists travelling to a research station in Entebbe, Uganda, crossed Kisumu en route to Uganda because of the railway line that connected Mombasa

[243] Weindling, P., Ed. (1995). International Health Organisations and Movements, 1918 - 1939 Cambridge, University of Cambridge Press.

to Kisumu.[244] So rather than a place of research, Nyanza, and particularly Kisumu, would be used as a crossing point for foreign researchers, although it did raise attention internationally due to the high levels of sleeping sickness.[245] With regards to biomedical administration and infrastructure, the EAMC was set up by colonial administrators in the 1950s. While over time research in East Africa increased, this was largely orientated around where the scientific infrastructure was, namely, not Nyanza.[246] This thesis argues that it was following political independence that Nyanza became a site of increasing research – especially with projects conceived of by foreign researchers. In the late 1960s and early 1970s two large-scale studies conceived of by scientists based at LSHTM and WHO described in this chapter particularly illustrate this.

7.1. Nyanza Province, Kenya 1963

This first section describes a place in Nyanza that attracted the attention of overseas researchers. Ahero, a town 20km outside of Kisumu the provincial capital and third largest city in Kenya, is part of the Kano Plain, in Nyanza Province.[247] East of Lake Victoria, the Kano Plain was an area that, during the early 1960s, was known as a place affected by alternating periods of drought and floods.[248] This tempestuous climate created issues for growing food and had an impact on the health of people living there in the form of dehydration and malnutrition. In addition to this, there were the major health concerns of bilharzia and malaria in the area, both parasitic diseases of special international interest in the 1960s. Given that it was also a highly populated area, after particularly extensive flooding in 1961 to 1962, the Kenya Irrigation Board made plans to irrigate tens of thousands of acres of the Kano Plain. This was part of a broader development project by the government of Jomo Kenyatta, formed after Kenyan independence in 1963. The scheme was packaged as showing attention to the rural areas and was envisioned as a project whose facilities

[244] Soff, H. G. (1969). "Sleeping Sickness in the Lake Victoria Region of British East Africa, 1900-1915 " African Historical Studies**2**(2): 255-268

[245] Soff, H. G. (1969). "Sleeping Sickness in the Lake Victoria Region of British East Africa, 1900-1915 " African Historical Studies**2**(2): 255-268

[246] Beck, A. (1973). "The East African Community and Regional Research in Science and Medicine." African Affairs **72**(288): 300-308.

[247] The Kano Plain is an extensive area (430 square km) of level land adjacent to a higher level of land.

[248] Millman, R. (1973). "Problems of the Natural Environment on the Kano Plains of Western Kenya." Cahiers d'études africaines: 181-192.

for irrigation and drainage would lead to a more stable condition for rice growing. [249] The scheme would create new living arrangements for those living in Ahero; five new villages were planned, each to take approximately 100 families. [250]

7.2. Arboviruses: planning and negotiating research on a former colony at a 'post'-colonial research institute in London, UK

The Kano Plain location attracted the attention of researchers at the LSHTM. Having seen many large-scale development projects during the colonial period, a number of colonial medical officers had become concerned as to the impact these might have on human health.[251] Therefore, they wanted to investigate the potential unintended consequences of large-scale development projects by way of a longitudinal study.[252] The researchers were particularly interested in The Kano Plain area because in the early 1960s, when they were planning new projects in new locations, the irrigation scheme for the Kano Plain had not yet started. The scientists in London were aware that they would be able to collect baseline demographic and health-related details of people living in the area and they would then be able to study over time the way in which this development project impacted upon health. [253]

7.2.1. 'Post'-colonial careers

The main person behind this project was Charles Gordon Smith, who was based at LSHTM. Gordon Smith was in many ways characteristic of a broader group of former colonial research officers in somewhat uncertain positions following the political independence of colonial territories. For ten years before returning to LSHTM, Gordon Smith had worked as a colonial medical officer in Malaysia. Despite not having postgraduate education, he had headed a virology research institute in Kuala Lumpur, Malaysia.[254] Subsequently, he returned to LSHTM in the 1960s. Returning

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[249] ibid

[250] Surtees, G., et al. (1970). "Ricefield development and arbovirus epidemiology, Kano Plain, Kenya." Trans R Soc Trop Med Hyg **64**(4): 511-522.

[251] Smith, C. E. G. (1981). "The London School of Hygiene and Tropical Medicine." Transactions of the Royal Society of Tropical Medicine and Hygiene **75**(Supplement 1): 12-20.

[252] Smith, C. E. G. (1981).

[253] Medical Research Council, General Records of the Medical Research Committee and Medical Research Council, Mr P. Williams, 'Kisumu Kano Plain Project' FD 12 885, 1968-70, UK National Archives document, London, UK

[254] Hardy, A. and L. Wilkinson (2001). Prevention and Cure: The London School of Hygiene and Tropical Medicine: A 20th Century Quest for Global Public Health Keegan Paul.

back to the UK after the political independence of Malaysia, Gordon Smith needed to be strategic in repositioning his career in a different context, given the broad changes in career structures following the independence of former British colonies. While this career trajectory describes the experiences of just one man, this is illustrative of broader changes at the time, of the returning of overseases officers to UK institutions following independence of former British colonies.[255] While virology as a discipline had been growing at LSHTM since the 1940s, this had originally taken a largely UK focus. [256] However, Gordon Smith was intent on expanding virology to a more international focus, which meant finding suitable locations abroad, so he could maintain a research position at LSHTM with research projects abroad. [257]

The proposal for this longitudinal project to be conducted in the Kano Plains was conceived of and planned by virologists in London. Justifications for the study were not evidenced through the specific health concerns of the location of the Kano Plain, but instead drawn from various other overseas examples linked to development projects and health:

> *Deforestation in the USSR led to an increase in tick-bourne encephalitis, desalinization in the Camargue resulted in a large increase in mosquito population and West Nile virus disease in man and horses, and urbanization in the S.E. Asia appears to have contributed to the emergence and spread of dengue haemorrhagic fever.*[258]

This approach characterised the interplay between research and the improvement of health in the early post-colonial period. Rather than attracting the attention of parasitologists looking to research abroad, whose remit would have included malaria and bilharzia - the key health concerns of the Kano Plain, this area attracted the attention of virologists looking to do research abroad. The disciplinary background of the researchers explains the focus on arboviruses. Arboviruses are group of viruses which are transmitted by arthropod vectors such as mosquitoes, fleas and ticks. This

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[255] Bivens, R. (2013) 'Coming 'Home' to (post) Colonial Medicine: Treating Tropical Bodies in Post-War Britain' Social History of Medicine 26 (1): 1-20

[256] ibid

[257] ibid

[258] Medical Research Council, General Records of the Medical Research Committee and Medical Research Council, Mr P. Williams, 'Kisumu Kano Plain Project' FD 12 885, 1968-70, UK National Archives document, London, UK

is as opposed to the particular health concerns of the context being researched. This detached approach to coming up with research problems contrasts greatly with the descriptions of local collaborations at MOPDRC described in Chapter 6.

7.2.2. 'POST'-COLONIAL FINANCING

In addition to changes in career structures for UK researchers in the early post-colonial period, there were also broad changes going on in terms of the financing of science in the UK. In the colonial context, money that had been available for research in East Africa had come from the Colonial Development Fund (CDF). The CDF had been a significant source of funding; during the 1940s it was higher than the annual budget of either the MRC or the Agricultural Research Council.[259] In the UK post-colonial context, the CDF was replaced by the UK Overseas Development Agency (ODA) (which was answerable to the Foreign and Commonwealth Office). To get funding for the project, Gordon Smith sent the proposal to the Working Party on Viral Epidemiology Overseas, which was set up by the MRC. This Working Party had been set up by colonial medical officers returning to the UK interested in site-specific projects overseas pertaining to virology. Projects approved by this group were then funded by the UK ODA. An example of another project funding in this way was one focusing on Japanese encephalitis in Sarawak, Malaysia.[260] Gordon Smith was successful in gaining funding from the UK (ODA) for the arbovirus project in Nyanza Province.[261]

Obviously, it was a time of change for the structures and institutions of overseas researchers who had previously relied on colonial funds. However, there were also continuations such as in the form of people, with the Working Party, the gateway to funding being set up by former colonial medical officers. In this vein, this study proposed in Kano Plain promised to be a valuable career path for a former colonial officer who had worked on virology in the former colony of Malaysia. Interest in researching arboviruses was not based on its effects on human health in this place at

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[259] Clarke, S. (2007). "A Technocratic Imperial State? The Colonial Office and Scientific Research, 1940-1960 " Twentieth Century British History **18**(4): 453-480

[260] Simpson, D. I., et al. (1970). "Japanese encephalitis in Sarawak: virus isolation and serology in a Land Dyak village." Trans R Soc Trop Med Hyg **64**(4): 503-510.

[261] Medical Research Council, General Records of the Medical Research Committee and Medical Research Council, Mr P. Williams, 'Kisumu Kano Plain Project' FD 12 885, 1968-70, UK National Archives document, London, UK

this time. Instead it was an academic interest, which had arisen out of previous experience in other settings, some of them colonial, where large development projects had taken place. While the choices made by the academic researchers may have been motivated, at least in part, by health, the academic interests of the researchers doing science from afar meant that the research was not necessarily driven by the specific health issues of the people of the Kano Plain in Nyanza Province.

7.3. NEGOTIATING WITH A NEWLY INDEPENDENT GOVERNMENT

The next task, upon gaining the acceptance and funding of the UK MRC, was to establish connections with the Kenyan Government. The arbovirus study was being planned at a time when the Kenyan Government had recently become independent from the UK. An in-depth reading of the negotiations of the collaboration offers insight into what was and was not considered negotiable. Some issues were up for debate, while others were not, and in this specific example, it was very much the British scientists who determined the priorities of this particular study.

According to the memorandum of agreement between the two parties and the accompanying correspondence, negotiations focused on arrangements for payment of staff and equipment. The UK MRC, using funds from the ODA, would fund the salary of the overseas staff and certain equipment that was needed. In addition, the MRC agreed to pay local staff '*required from time to time to undertake the approved programme of work of the unit.*'[262] Alongside the funds coming from the MRC, the Kenyan Government was also expected to make provisions for the project. In the agreement it was decided that the Kenyan government had to exempt staff from import and export tax and from taxation of their salary.[263] In addition to being exempt from tax, more substantially, the Kenyan government was required to '*provide suitably basically equipped laboratory accommodation*'.[264] The Kenyan

[262] Medical Research Council, General Records of the Medical Research Committee and Medical Research Council, Mr P. Williams, 'Kisumu Kano Plain Project' FD 12 885, 1968-70, UK National Archives document, London, UK

[263] Document E743/1 in folder FD12/885 18th December 1970, Letter for the attention of TOWAJ Kenya High Commission, From A J Vittery, UK National Archives, London, UK

[264] Letter from the Kenya Ministry of Health, June 1970, FD12/887, Kenya National Archives, Nairobi, Kenya

government provided the MRC staff with two buildings with equipped laboratories in the local public hospital. This was at a time when there were issues of shortage of space, and the local hospitals in Nyanza were significantly underfunded.[265] This suggests that the British scientists were influential in convincing the Kenyan Government of the importance of their work, leading the Government to prioritise certain public spaces for the purposes of British research.

However, other UK funder demands relating to the arbovirus project were refused by the Kenyan Government. Initially, the British staff wanted the Kenyan government to build accommodation in Kisumu for them (as the project was to be a long-term ten year project). However, the Kenyan Ministry of Health, while ready to provide funds for studies that were of relevance to the population (usually of up to 25%), were not happy that they were required to build new houses as well as offer a laboratory: '*It would be patently wrong to insist that they should build new staff houses when their own Kenya government staff are unable to obtain them themselves and have been, … , waiting for over a year*.'[266] When it was realised that the Kenyan Government was not going to build staff housing, the MRC shifted its demands to rental allowances from the Kenyan Government and, when prospects looked bleak for this measure, it was finally decided that the MRC would provide its own funds for this purpose.

The research priorities of this project were clearly defined in advance of the liaison with the Kenyan Ministry of Health and the study's aims and questions remained intact during negotiations; it was only the logistical aspects that were up for negotiation. This shows that the Kenyan Government and the British scientists entered into this agreement for different purposes. The Kenyan government, which contributed equipment and funds, did so on the basis of it being of health relevance to people in Kenya. The British scientists did so on the grounds of their more academic health-related research questions. What becomes apparent from this correspondence is the way in which the Kenyan government was encouraged, and

[265] Ndege, G. O. (2001). Health, State and Society in Kenya Rochester, University of Rochester Press.

[266] Letter from the Kenya Ministry of Health , Kenya Ministry of Health, June 1970, FD12/887, Kenya National Archive, Nairobi, Kenya

did contribute, to this project on the grounds of it being of relevance to the health of the Kenyan context. The idea that this project was of relevance to the health of people in Kenya was not questioned and seen as a legitimate reason for the Kenyan government to contribute resources towards the project. Therefore, rather than the negotiations being about the appropriateness of the research, instead the negotiations were about the logistics of the already defined project.

7.4. Working in Ahero, Nyanza, Kenya

In 1971 a team of one project leader, one medical officer, two entomologists, one zoologist, two technical staff and a medical secretary all arrived in Kisumu.[267] It was a significant study from the context of Ahero, Nyanza; baseline data were collected for over 20,000 people, who became known in the documents as the 'Kisumu population'.[268] This was the largest study on humans ever conducted in the province. For the next stage of the longitudinal study, the scientists needed the rice irrigation scheme to begin in order to investigate the impact of this development upon arboviruses and human health. The plan was that after collecting a baseline set of data, this would then be compared to changes over time, with the assumption that the building of a large irrigation scheme would somehow impact upon the presence of arboviruses and their relation to human health. The virologists were interested in arboviruses. Part of the cycle is in vectors and part in humans. Beyond the laboratory, the scientists were interested in looking at large scale changes in land use, their effects on arboviruses, and thereby, on human health.

The longitudinal arbovirus study did not continue as planned. Due to political reasons the irrigation scheme planned by the government never happened. By 1975, the land development schemes had '*failed to materialise'.*[269] This meant that years after the study had begun, circumstances beyond their control prevented researchers from studying the longitudinal changes expected from this irrigation scheme.

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[267] Letter from the Kenya Ministry of Health, June 1970, FD12/887 Kenya National Archives, Nairobi, Kenya

[268] Medical Research Council, Kisumu Project, UK Group, 'Minutes of the meeting held on Wednesday 5 November 1975 in the Board Room at the London School of Hygiene and Tropical Medicine'. KNA FD12/887 Kenya National Archives, Nairobi, Kenya,

[269] Medical Research Council, Kisumu Project, UK Group 'Extract of the Minute of the TMRB meeting held on 4th December 1975. FD12/887 Kenya National Archives, Nairobi, Kenya,

This was not the only problem; in addition to the irrigation scheme not happening for political reasons, after collecting baseline data and conducting relevant analysis, it was found that the arboviruses of the area were not actually a risk to human health. It was found that: '*There were no indications that the arboviruses that had been found were pathogenic to man and this reflected similar findings reported in other long-term arbovirus studies elsewhere in the world.'*[270] In light of these significant developments, a meeting was held on 5th November 1975 at the boardroom of LSHTM. Here it was decided that '*the MRC project Kisumu should be terminated*.'[271] The decision to disband the project, made by a board of scientists in London, dismayed the scientists physically based in Kisumu.[272] Clearly, this long- term large-scale biomedical study using large funds from the UK ODA and with contributions from the Kenyan Government turned out not to be of health relevance for the people living on the Kano Plain. However, from a research perspective this study would still be considered of scientific value. The collection of large amounts of demographic data and an analysis of the relationship between arboviruses and human health in this region, even if shown to not be of health concern, would still be of value to the virology community, especially when planning further overseas research projects. However, the memorandum of agreement and reason for the involvement of the Kenyan government was based on the notion of this research being of health relevance to the Kenyan people, so that the overstretched newly independent government had allocated resources to the scheme, though it faced other health concerns. However, as another project in the Kano Plain showed, just because the object of interest *is* a health concern of the particular context, does not mean it is of health value to the country where the research is being conducted. Again I want to point out here how much this contrasts with the descriptions of projects planned by scientists at MOPDRC.

[270] Tropical Medicines Research Board 'Extract of the Minute of the TMRB meeting held on 4th December 1975. FD12/887 Kenya National Archives, Nairobi, Kenya
[271] ibid
[272] ibid

7.5. WHAT HAPPENS WHEN THE FOCUS *WAS* ON MALARIA?

While the arbovirus study did not focus on a phenomenon that was actually of health concern to the specific context, a large WHO-funded study did focus on a health concern of the area: malaria. Alongside DDT, the pesticides industry in collaboration with WHO, had begun testing alternative pesticides. In 1960, the WHO set up 'WHOPES' the WHO programme for evaluating and testing new insecticides. WHOPES was one of the main activities of the Vector Control Unit, part of the Division of Environmental Health within the WHO. WHOPES resulted from a collaborative agreement between the chemical industry (pesticides manufacturers), research, government institutions and regulatory agencies set up to support the Malaria Eradication Campaign.[273] The testing process was lengthy. Fenitrothion was one of the insecticides being developed as an alternative to DDT, the main insecticide used for malaria eradication. Fenitrothion had previously been tested in other locations and was showing promising results.

By the 1960s Fenitrothion (OMS-43) had been shown to be effective in the early stages of a set of WHOPES trials. It showed positive results up to a stage V in a trial in villages in Nigeria between 1964 and 1965. Given the success of Fenitrothion up to that point, evaluators were looking for a location with high levels of malaria to test Fenitrothion in the next phase. Locations that had been involved as testing sites as part of WHOPES included Kaduna, Nigeria; Bangkok, Thailand; Dar es Salaam, Tanzania; Taipei, China; and Seoul, Republic of Korea. Finding a suitable location for the next experimental phase of the trial was proving increasingly difficult because the areas used needed to not be already being sprayed. Countries such as those in Central America, seeing the benefits so far of another insecticide, did not want to wait until the next phase of trials before using it in their campaigns, as they were already keen on using insecticides in their own campaigns.[274] Alongside concerns

[273] Organisation, W. H. (2010). WHO Pesticide Evaluation Scheme: 50 Years of Global Leadership W. H. Organisation. Switzerland

[274] ibid

over finding a suitable location, there were also concerns over a lack in the number of insecticides being put forward for evaluation.[275]

It was a stage VI study of Fenitrothion that was conducted on the Kano Plain to test the use of Fenitrothion as a large-scale insecticide. The study involved the pre-spraying, spraying and post-spraying of a defined area. The pre-spraying phase began in 1968. This study also involved the collection of base-line data. This was known as the pre-spray phase and occurred between October 1968 and August 1969. After this baseline phase, homes were sprayed with Fenitrothion, and there was a comparison zone left unsprayed, known as an evaluation zone. The evaluation zone was at least 1.6km away from the sprayed area to make sure that it would not be influenced by mosquitoes migrating from the sprayed area. [276]

The Fenitrothion study in Nyanza was considered a success both methodologically and also with regards to the object of study. In the published scientific articles from the study, it was found that the '*Adult population of malaria vectors were reduced to negligible densities both indoors and outdoors after the last round of spray. A 90% reduction in the risk of contracting malaria was achieved.*'[277] Given the extent of the success of the trial, it was decided that it would be phased out: '*Considering the objectives of the project as defined in the previous agreements has been reached, it was considered favourable that the WHO be phased out…*'[278] In another document it was stated that '*…we explained that the project has reached its planned objectives and thus needs to be terminated, and not transferred to other countries as was suspected. The results are highly satisfactory and will be of immense value to anti-malarial activities in Kenya, other countries in Africa and elsewhere in the world.*'[279]

[275] This could also be due to many different reasons associated with the eradication campaign. Organisation, W. H. (2010). WHO Pesticide Evaluation Scheme: 50 Years of Global Leadership W. H. Organisation. Switzerland

[276] Fontaine, R. E., et al. (1975). Entomological evaluation of fenitrothion (OMS-43) as a residual spray for the control of an An. gambiae and An. Funestus, Kisumu, Kenya. H. WHO, Technical Document Geneva, World Health Organisation

[277] Fontaine, R. E., et al. (1978). "Evaluation of fenitrothion for the control of malaria." Bull World Health Organ **56**(3): 445-452.

[278] Correspondence, Ministry of Health, WHO ACRO project, BY 7 145 WHO ACRU, Kenya National Archives, Nairobi, Kenya

[279] ibid

7.6. What did this mean for people living in Nyanza Province?

What is particularly interesting about this trial, when bringing in the perspective of place, and thinking about it from the perspective of people living in the Kano Plain is what happened at the end of the trial. Apparently, the knowledge that the WHO wanted was considered complete:

> *In summary, considerable knowledge has been gained on all aspects of the biology and ecology of the vectors of malaria and on the epidemiological aspects of malaria transmission in the area. In addition, it has been shown that interruption of malaria transmission can be obtained for almost the whole year using Fenitrothion.*[280]

However, the local council were concerned, given the success of the trial, that it would leave the local population vulnerable to malaria. In a proposal written in 1976, in preparation for the phasing out of the project, scientists raised concerns over the iatrogenic effect of the trial in this location:

> *As a result of the very effective impact of the insecticide on vector populations, the age group 0-3 in the sprayed area have practically no exposure to malaria. This plus the fact that due to an interruption of the general population's exposure to malaria and the loss in immunity to the disease is feared that a sudden withdrawal of the control activities may lead to malaria outbreaks and possible death among the population of the project area. Consequently a plan for surveillance and reorganisation of the project needs to be prepared and implemented in order to monitor the epidemiological changes and to ensure a gradual return of malaria endemicity and building up of the population immunity to the disease.*[281]

Therefore concerns were raised about leaving the residents of Nyanza potentially increasingly susceptible to malaria, and requests were made from staff from the Municipal Council of Kisumu for a more gradual phase out.[282] However, this was not agreed by the WHO and a letter was written on the 22nd May 1976 which noted: '*The*

[280] Correspondence, Ministry of Health, WHO ACRO project, BY 7 145 WHO ACRU, Kenya National Archives, Nairobi, Kenya

[281] Dr. Z. Onyango, DDMS, Minstry of Health, Kenya 1976, Proposal for phasing out project VBC- 026 (416) BY 7 135 WHO ACRU, Kenya National Archives, Nairobi, Kenya

[282] March 1976, Letter from Dr. Odhiambo Olel, Medical Officer of Health, to Dr Fontaine, WHO (446) BY 7 135 WHO ACRU, Kenya National Archives, Nairobi, Kenya

WHO has categorically stated that there would be no financial support for this phasing out operation and it is now full Ministry of Health's responsibility to carry out the work.'[283]In 1976, the programme was 'transferred' to the Kenyan government. In practice this meant that some of the vehicles and equipment were sent to the coastal town of Mombasa (where there was also a high level of malaria) and the rest remained in Kisumu. However, the spraying of Fenitrothion was never conducted again in the local vicinity due to lack of resources.[284] This summary of the study is used here to further understand the relations between the WHO, industry and particular places, notably how the grounding of history in particular places can contribute to our understanding of particular institutions. It shows that there were shared connections between the researcher and institutional interests (malaria in this case) and the particular health concerns of a specific context during this time. However, it also shows that this does not mean that the presence of research on this disease is necessarily of relevance to the place in which the research is being conducted. Rather than following the historical tangent of particular institutions and attempts at tackling disease, by using the history of a particular place to look back and forth between place and institution we are able to develop a more nuanced understandings of the complexities between biomedical experimentation and attempts at improving health.

7.7. The significance for thinking about the nation in science

These two vignettes looked at the complex interplay between the ethos of improving health and scientific experimentation of Northern Institutions in the early post-colonial period. It focused specifically on a particular geographic place in Kenya, in order to localise the perspective and look back and forth between institutions and place. This approach was used in order to look in-depth at the way in which transnational improvements in health and experimentation interplayed during this time. The former colonial institute of the LSHTM and the late 1960s was a context of potential insecurity for scientists attempting to continue their transnational careers.

[283] Correspondence, Ministry of Health, WHO ACRO project, BY 7 145 WHO ACRU, Kenya National Archives, Nairobi, Kenya

[284] Oloo, A. J., et al. (1996). "Some emerging issues on the malaria problem in Kenya." East Afr Med J **73**(1): 50-53.

It was a time of change for the structures of science in the UK, but there were also continuations. Thus, the former colonial medical officers were able to hold key gateways in the post-colonial period of conducting overseas research, such as funding. It is at a time of such change that academic rigor and the building of disciplines tied to overseas health, such as virology, became increasingly important. This in turn had epistemological implications for the research questions asked about particular places; a focus on virology instead of parasitology although epidemiology would suggest another priority. However, the conduct of transnational research, in this case the malaria study of the WHO conducted in the same area, demonstrated that, even when the object of interest is of specific relevance to the context (malaria), the aims of scientific evidence production and improvements in health continue to be at times in conflict. In doing so what has been highlighted are the difficulties of conducting science 'from afar', often associated with the colonial histories of medicine that did not necessarily end after independence.[285] These vignettes of the trials serve to further historicise the complexities and illustrating tensions of this time. So far in this chapter I have pointed out the way in which these projects contrasted with the ones planned by scientists at MOPDRC. In addition to a contrast in research questions and relevance to the local context, it is also important to consider the way in which these groups varied in terms of resources. The British and WHO scientists were fully funded to conduct large scale research projects. The MOPDRC team on the other hand struggled to find a workforce and to have enough funds to conduct research at the same time. The next part of this chapter takes us back to the MOPDRC branch of KEMRI.

7.7.1. NYANZA AS AN INCREASINGLY INTERESTING PLACE FOR RESEARCH

While the previous chapter described the way in which Nyanza as a province became increasingly attractive to foreign researchers, next it is important to explain the way in which Nyanza was also becoming increasingly attractive to researchers within other branches of KEMRI and not just those from abroad. So this is other branches of KEMRI beyond MOPDRC In Chapter 4, the various branches of KEMRI were outlined

[285] Tilley, H. (2004). "Ecologies of Complexity: Tropical Environments, African Trypanosomiasis, and the Science of Disease Control in British Colonial Africa, 1900-1940." Osiris **19**: 21-38.

describing the different remits and sources of funding. It was pointed out that MOPDRC was the only branch to specifically focus on malaria, and also the only one to be built in Nyanza Province after the setting up of KEMRI. MOPDRC was also the only branch of KEMRI to be solely funded by the Kenyan Government.

Of particular importance is that one of the Nairobi-based branches of KEMRI, the Clinical Research Centre, which was largely funded by the US CDC, decided to conduct a large study on malaria in Nyanza Province in the early eighties. This was despite malaria not being the specific scientific remit of CRC and MOPDRC having that remit. The Clinical Research Centre had a remit to 'research humans' which meant that the CRC was able to have a broad spectrum of diseases to choose from. This was unlike the other branches, which had a more specific focus such as malaria, leprosy or viruses. It is interesting that this branch was also the one most heavily funded by the US. See chapter 5 for further in-depth descriptions of the funding of the different branches. This malaria project, headed by CRC and not MOPDRC, was a large community- based malaria control project, conducted in the Saradidi area of western Kenya in the early 1980s.[286] Known as the 'Saradidi study', this was a large controlled trial involving many villages.[287] While being a large controlled study conducted by foreign researchers to test a drug, it was known in scientific publications as a 'large community based malaria control project.'[288] The Saradidi community, located 40km north east of Kisumu, was described at the time as a 'holoendemic malaria setting, with inadequate health facilities.'[289] Holoendemic means that every individual in the population is infected (parasitologically – not necessarily suffering).

The overall purpose of the study was to organise the community at village level to provide chloroquine, which was at the time the recommended treatment in Kenya for malaria.[290] The chloroquine was intended to be provided as a treatment to

[286] Oloo, A. J., Vulule, J. M. and Koech, D. K. (1996)
[287] Oloo, A. J., Vulule, J. M. and Koech, D. K. (1996)
[288] Spencer, H. C., Kaseje, D. C. and Koech, D. K. (1983) The Kenyan Saradidi community malaria project: I. Response of Plasmodium falciparum isolates to chloroquine in 1981 and 1982. Trans R Soc Trop Med Hyg. **77**, 689-692
[289] Spencer, H. C., Kaseje, D. C. and Koech, D. K. (1983)
[290] Oloo, A. J., Vulule, J. M. and Koech, D. K. (1996)

symptomatic people, and as a prophylaxis to pregnant women.[291] Many people participated in the project; three study areas were involved, each consisting of 15,000 people. In one area people were given both treatment and chemoprophylaxis, in another area treatment only, and in a third area nothing as it was considered as a control. The drugs were given by village health helpers (VHH), who were selected by the community, they were trained by people from the project.[292] The overall outcome of the project itself was that this method of providing chloroquine was *ineffective*.[293]

The Saradidi study could be considered to be a scientific success; a large number of publications came out of this malaria project, thirteen in total. Five qualitative studies explored whether people were taking the drugs; the reasons why they were not taking drugs; patterns of consumption and other sources of antimalarial treatment; and symptoms associated with common disease.[294] Three studies explored the impact of the program; on pregnant women, on mortality and fertility and an overall assessment.[295] One study explored the potential side effects of chloroquine.[296]

[291] Spencer, H. C., Kaseje, D. C. and Koech, D. K. (1983)

[292] Spencer, H. C., Kaseje, D. C. and Koech, D. K. (1983)

[293] Kaseje, D. C., Spencer, H. C. and Sempebwa, E. K. (1987) "Usage of community-based chloroquine treatment for malaria in Saradidi", Kenya. Ann Trop Med Parasitol. **81 Suppl 1**, 111-115

[294] Mburu, F. M., Spencer, H. C. and Kaseje, D. C. (1987) "Changes in sources of treatment occurring after inception of a community-based malaria control programme in Saradidi, Kenya". Ann Trop Med Parasitol. **81 Suppl 1**, 105-110 Kaseje, D. C., Sempebwa, E. K. and Spencer, H. C. (1987) "Malaria chemoprophylaxis to pregnant women provided by community health workers in Saradidi, Kenya". I. Reasons for non-acceptance. Ann Trop Med Parasitol. **81 Suppl 1**, 77-82 Kaseje, D. C., Spencer, H. C. and Sempebwa, E. K. (1987) "Usage of community-based chloroquine treatment for malaria in Saradidi, Kenya." Ann Trop Med Parasitol. **81 Suppl 1**, 111-115 Spencer, H. C., Kaseje, D. C., Roberts, J. M. and Huong, A. Y. (1987) "Consumption of chloroquine phosphate provided for treatment of malaria by volunteer village health workers in Saradidi, Kenya" Ann Trop Med Parasitol. **81 Suppl 1**, 116-123 Spencer, H. C., Kaseje, D. C., Roberts, J. M. and Huong, A. Y. (1987) "Symptoms associated with common diseases in Saradidi, Kenya". Ann Trop Med Parasitol. **81 Suppl 1**, 128-134.

[295] Spencer, H. C., Kaseje, D. C., Sempebwa, E. K., Huong, A. Y. and Roberts, J. M. (1987) "Malaria chemoprophylaxis to pregnant women provided by community health workers in Saradidi, Kenya. II. Effect on parasitaemia and haemoglobin levels". Ann Trop Med Parasitol. **81 Suppl 1**, 83-89 Spencer, H. C., Kaseje, D. C., Mosley, W. H., Sempebwa, E. K., Huong, A. Y. and Roberts, J. M. (1987) "Impact on mortality and fertility of a community-based malaria control programme in Saradidi, Kenya." Ann Trop Med Parasitol. **81 Suppl 1**, 36-45 Spencer, H. C., Kaseje, D. C., Collins, W. E., Shehata, M. G., Turner, A., Stanfill, P. S., Huong, A. Y., Roberts, J. M., Villinski, M. and Koech, D. K. (1987) "Community-based malaria control in Saradidi, Kenya: description of the programme and impact on parasitaemia rates and antimalarial antibodies." Ann Trop Med Parasitol. **81 Suppl 1**, 13-23

[296] Spencer, H. C., Kaseje, D. C., Brandling-Bennett, A. D., Oloo, A. J. and Watkins, W. M. (1987) "Epidemiology of chloroquine-associated pruritus in Saradidi, Kenya." Ann Trop Med Parasitol. **81 Suppl 1**, 124-127

Alongside this, based on samples collected, four studies explored the responses of p. falciparum to the presence of chloroquine.[297]

While the Saradidi study is interesting with regards to thinking about the outputs of science, here it is being described with regards to the significance it had on the malaria branch of KEMRI, which was already based in Nyanza; MOPDRC the focus of chapter 6. This branch, MOPDRC was described in Chapter 6 as the first national malaria research institute in Kenya, with all the hope and excitement that went along with it for the Kenyan malaria scientists. However, despite being focused on 'malaria', this study was not set up by scientists at MOPDRC. There were, however, some collaborations. Once the Saradidi study had already been decided on and defined by the CRC branch of KEMRI, there were practical collaborations between MOPDRC and CRC. The parasitology team reported in a 1981 report that they worked on the Saradidi project, *'we started collaborating in the Saradidi Community Based Malaria Chemoprophylaxis and Chemotherapy Control Project on 23rd February, 1981. Six people were deployed from our centre for this work. We were on the field for 2 weeks collecting blood films and after that the blood films were stained and examined in our laboratory*.'[298] The collaboration was also briefly described in some of the minutes and correspondence of MOPDRC, for example, in a memorandum in 1983 it was mentioned that '*for about a year now, MOPDRC, has provided a technologist, technicians, a driver and a land rover to the project. The Centre will continue to collaborate in the project*.'[299] We can see that while there was some involvement of MOPDRC in the malaria project, this was not an intellectual input into

[297] Spencer, H. C., Kaseje, D. C. and Koech, D. K. (1983) "The Kenyan Saradidi community malaria project: I. Response of Plasmodium falciparum isolates to chloroquine in 1981 and 1982." Trans R Soc Trop Med Hyg. **77**, 689-692 Campbell, G. H., Brandling-Bennett, A. D., Roberts, J. M., Collins, F. H., Kaseje, D. C., Barber, A. M. and Turner, A. (1987) "Detection of antibodies in human sera to the repeating epitope of the circumsporozoite protein of Plasmodium falciparum using the synthetic peptide (NANP)3 in an enzyme-linked immunosorbent assay (ELISA)." Am J Trop Med Hyg. **37**, 17-21 Collins, W. E., Spencer, H. C., Kaseje, D. C., Shehata, M. G., Turner, A., Huong, A. Y., Stanfill, P. S. and Roberts, J. M. (1987) "Malaria chemoprophylaxis to pregnant women provided by community health workers in Saradidi, Kenya. III. Serologic studies". Ann Trop Med Parasitol. **81 Suppl 1**, 90-97 Spencer, H. C., Kaseje, D. C., Brandling-Bennett, A. D., Oloo, A. J., Churchill, F. C. and Koech, D. K. (1987) "Changing response to chloroquine of Plasmodium falciparum in Saradidi, Kenya, from 1981 to 1984." Ann Trop Med Parasitol. **81 Suppl 1**, 98-104

[298] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Staff Meetings General: Progress Reports from all Sections at MOPDRC, 1981, Kisian Archive, Kisumu, Kenya

[299] The Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Memorandum to the Meeting of the Scientific Programmes Committee of the Board of Management, KEMRI 19th-20th December 1983, Kisian Archive, Kisumu, Kenya

the aims of the study, instead it was more of an auxiliary role to an already defined research project. Of particular significance to this thesis is that the Saradidi study signifies the beginning of the permanent presence of CRC and, more importantly, CDC (the US Centre for Disease Control) in Nyanza. This is described further in chapter 8.

7.7.2. INTERNATIONAL COLLABORATION AS A TOOL FOR BRINGING IN FUNDS

Chapter 6 described the setting up of the MOPDRC in Nyanza Province. In these descriptions we learnt that the staff members working in the scientific research institute were in some ways working at a time of great hope and excitement. They were making plans and deals with local industry, politicians and residents to create jobs and science that would be locally relevant. It was the first time in the history of Kenya, with the collapse of the EAC, that that there was the potential to create locally and nationally relevant science.

However, we also saw from Chapter 5 that the scientists were working in 'tight corners'.[300] The historian John Lonsdale used the term 'tight corners' in order to describe the agency of people in Kenya in the post-independent period who were working towards building a nation in a context of history *not* of their own making. What is interesting to look at here is the way in which the scientists at MOPDRC navigated this context of attempting to conduct locally appropriate science in a context where they were limited in the funds, staffing and facilities to conduct the science they wanted.

Chapter 5 discussed the difficulties in acquiring enough funds to do the science that the scientists of MOPDRC wanted to do. In light of the scarce resources, the scientists were encouraged by KEMRI headquarters to write proposals as ways of drawing resources into the Centre. In order to attract the finances of foreign sources, these scientific projects would need to be of relevance to the broader agendas of foreign funders.

[300] Londsdale, J. (2000). "Agency in tight corners: Narrative and initiative in African history " Journal of African Cultural Studies **13**(1): 5-16.

An example of this approach can be illustrated through looking at a vaccine proposal written in 1982 by a scientist at MOPDRC (shortly after the Saradidi study had begun). In this proposed laboratory study proposed to look at the biochemistry of malaria parasites and vectors, specifically '*the biochemistry of anopheles gambiae vectors*' the aim of which was '*to attempt culture of sporozoites in vitro*'. This was expected to be achieved through the study of local malaria vectors and determining the 'biochemical factors' involved in malaria transmission. The outputs of this study were to contribute towards the future hope of a malaria vaccine, in the protocol this period was characterised as an exciting one in vaccine research '*The period between 1965 to date has been of extensive scientific investigation on the development of a vaccine against malaria so far culminating in Trager's success in producing a continuous in vitro culture of p.falciparum*'. [301]

Also included in this proposal was that through linking in with the international aspirations of a malaria vaccine, funds would also be used to build up the laboratory. In addition to working on the scientific project, the funds for the proposed study hoped to contribute towards '*manpower training*' and '*laboratory facilities*'. The budget of the proposed study was KSh 52,000.[302] So it appears that this study, in contrast to the more locally appropriate studies described above, was intended to fit into the international project of a malaria vaccine, but at the same time to build up local research capacity through this centre. Therefore, these proposals would be a tapestry of the 'capacity' of the local context, which would be capacity in the biological form of the institution of interest such as parasites or vectors. In addition to this, the scientists would weave into the proposed budget infrastructure for future scientific projects. What is clear from the archive documents is that the science they were planning at MOPDRC also needed to become a tool for bringing in international resources, in order to not only do the science but also to build up the research institute. What is important to note here though is that, while the scientists were

[301] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Malaria Parasite and Vector Biochemistry, 1982 Kisian Archive, Kisumu, Kenya

[302] Kenya Medical Research Institute, Malaria and Other Protozoal Diseases Research Centre, Malaria Parasite and Vector Biochemistry, 1982 Kisian Archive, Kisumu, Kenya

looking to collaborate, this was still with the notion of collaborating as a research institute. This links back to the guest houses described in Chapter 5, which were planned to be built in order to host the 'visiting' researchers.

7.8. SUMMARY

Having described MOPDRC in the previous chapter, this chapter widened the focus to consider the way in which the Province of Nyanza was engaged with by Northern institutions with a remit for 'health' in the early post-colonial period. What is of particular interest here is that one of these studies failed to investigate a health concern of relevance to the local context and instead investigated arboviruses, while the other, a WHO study of malaria, left an unwanted legacy to the area. Both studies raise important questions as to the intertwined, yet at times divergent, objectives of scientific research and improving health in the early post-colonial context. These contrast greatly with the political imaginary of the Kenyan scientists.

This chapter set the scene of Nyanza Province, Kenya, following political independence by looking at the first two large-scale biomedical research studies conducted in Nyanza soon after independence. We see that these studies, conducted by Northern institutions, detached from the place in which the research was being conducted, had many of the tensions of conducting science 'from afar' attributed to colonial science. It is shown that the area surrounding Kisumu gets used in a different way by each institution and how the place becomes connected to post-colonial ambitions of former colonial institutions and also the ends of the malaria eradication campaign. This chapter highlights the tensions between scientific experimentation and intentions to improve health when the empirical objects of study are not being generated from the locations in which the research in to be conducted. It shows that despite political independence happening in 1963, biomedical research in Nyanza was becoming increasingly attractive to overseas researchers.

Throughout this thesis a key theme has been the tensions between practicing relevant science while collaborating internationally. Chapter 5 looked the way in which these potential tensions were considered on a national level in the 1970s. Chapter 6 looked at this from the perspective of setting up a national malaria

research institute in a particular place. This chapter has looked at international institutions working in the same place.

Going into a more local level, in following the plans for MOPDRC in Nyanza, we are able to see the way in which ideas of post-colonial science were enacted through the building of the Centre, and the planning of the scientific projects envisioned by these East African scientists. This is why this branch was particularly interesting for exploring post-colonial science in East Africa. Through following the approaches to science at MOPDRC in Chapter 5 we saw that initially the scientific studies that were planned were inductive of the local context. They were planned and generated by curious scientists, medical consultants and local industry; each with a stake in the health of people in Nyanza Province. They saw medical phenomena going on and they wanted research to be conducted in order to be able to investigate these issues. They worked in collaboration with the scientists at MOPDRC. However, the facilities, economics and manpower at MOPDRC were also limited, which meant that it became difficult for the scientists to be able to conduct the research that they wanted to conduct while also build a functioning research institute to conduct this research. Therefore, over time, they had to apply for other sources of funding, such as foreign investment. In doing so the scientists had to generate research projects that were not inductive of the local context, but instead were inductive of the global context of biomedical research; considering projects which would be interesting to foreign researchers. What is interesting about the details of scientific protocols such as the one on vaccines is the manipulation and collaboration going on by the scientists at this research centre.

In order to argue the case for the research being conducted in Nyanza they had to explain the value of the site as a place for research, such as, by highlighting the presence of particular parasites in the area. By looking at this particular branch it was possible to contextualise the science within the specific place in which it was being set up. Chapters 6 and 7 show that bringing in place added another layer of complexity.

CHAPTER 8. NYANZA AS SOMEWHERE TO TEST VERSUS EXPLORING MALARIA IN A PLACE, 1980-2010

The previous chapters drew heavily on archival research in order to describe the ethos behind the setting up of the research institute. This chapter instead draws instead from time spent in Kisumu, Nyanza Province between 2009 and 2010 and interviews with people who have seen changes over time. Three key areas are focused on in order to explore change. Firstly, the subjective experiences of the scientists who have been based there over time. Secondly through the experiences of the library - a key feature of MODPRC when it was set up in 1979 – which still exists. Then finally though going back to the land of the research institute and considering the experiences of those who have lived next to the research institute over time. It concludes by asking the question of whether the science is still connected to the place in which it is being researched. By the time I arrived in Kisumu in 2009 what was previously known as the MOPDRC had changed greatly. The chapter begins with an overview of the centre by 2009.

8.1 SETTING THE SCENE – THE CENTRE FOR GLOBAL HEALTH RESEARCH 2009-2010

No longer known as the Malaria and Other Protozoal Diseases research centre, it was known by 2009 as the Centre for Global Health Research (CGHR). When visiting the CGHR a major feature was the presence of the US Centre for Disease Control (CDC). Since the Saradidi project described in chapter 7, the presence of CRC and, increasingly through this, the US CDC and US Walter Reed, grew in Nyanza from the 1980s onwards. In the 1990s the US CDC built large high-tech laboratories and an administrative section on the same plot of land acquired by MOPDRC. In 1998, a Clinical Research Centre was built by KEMRI and CDC at the Nyanza Provincial Hospital in Kisumu. This was to accommodate research studies being conducted at the Provincial Hospital. Since this time, it has been expanded to provide additional space for research studies, administration and malaria and HIV laboratories. Extending the scope of research, in September 2001, CDC and KEMRI launched a

demographic surveillance system in the Siaya and Bondo Districts of western Kenya.[303] The name by 2009 was known to people locally as interchangeably between KEMRI and CDC. Disease focus had diversified since the 1990s to include TB, HIV/AIDS and a Demographic Surveillance Project.

The object of interest here was a place, an institution, but also the global connections involved in this. As becomes clear through this chapter, I chose to spend periods of time in Kenya, however this was never longer than six months. Instead, I chose to go and come back a number of times. In doing so I felt that as a researcher I was not able to hold on to the discomforts by coming and going. It was important to go to the place in order to understand the place and also the research questions of relevance to not only the wider academic community, but also the people who were also active in this research. This would not have happened if I had studied this topic from an archive in London. Equally, the same tensions may not have arisen if I had spent the whole period of the thesis in Kenya, where I may have become less aware of the juxtapositions between the goings on of 'global public health' championed by institutions such as the LSHTM, and the lesser told and heard stories held in particular places.

It was a methodological choice that I wanted to be open to letting the sources help to direct the avenues of research. This standpoint had implications for the methodological approach that I took. While archival resources were extremely valuable to this thesis, I did not want to rely solely on formal governmental archives.[304] As 'machines of memory' there is a growing body of literature on the way in which formal archives help shape what does and does not become remembered.[305] This is not a rejection of formal archives, rather, as Stoler

[303] The DSS involves a combination of computer and field work. Field- work involves house-to-house interviews every four months, surveillance of child outpatient visits to peripheral health facilities, and monitoring child in-patient visits at two District Hospitals. Annual household surveys are conducted on socioeconomic and educational status alongside collection of morbidity and mortality data. The DSS system provides valuable base line data and follow up information for the conduct of large scale trials.
[304] Stoler, A. L. (2002). "Colonial Archives and the Arts of Governance" Archival Science **2**: 87-109.
[305] Stoler, A. L. (2002).

encouraged in relation to colonial archives, '*A more situated engagement of archives as cultural artefacts of fact production, of taxonomies in the making.*'[306]

Learning about and observing the CGHR in 2009 and 2010 I could not help but contrast it with the plans of MOPDRC described in chapter 6. Being present in the 'global' research institute based in Nyanza in 2009 and 2010, while reading the documents I was struck by the contrast between the then global present organisation of biomedical research in comparison to what had been envisioned in these documents written by Kenyan scientists in the late 1970s. From early readings of the documents there appeared to be a sense of a 'nation' of Kenya somewhat lacking from the highly collaborative infrastructure of the Centre for Global Health Research.

As will become clear through this chapter and through the thesis, this work was dependent upon the collaboration and experiences of other people. It was through listening, observing and reflecting upon the multiple descriptions that I was being given that certain particular disjunctures arose and juxtapositions became apparent; It was also through gaining the trust of particular people, showing my interest and sensitivity to the topic, that I was able to hear particular stories, which were more hidden from the surface. These are stories that I may not have found if I had gone straight to a national archive.

As a result of reading this literature I was not content solely with formal archival sources. Having said this, I also found that it was the close and careful reading of archival sources that were important for gaining the trust of certain people; showing that I was serious about finding out about the past of the place. In doing so people would open up and offer further sources, sources beyond the archives.

Conceptualising every site as multi-temporal helped me to think about the continuities and discontinuities of doing science in particular places. In other words, what ideas and practices do and do not remain durable over time.[307] Inherent to an approach that contextualises science is the emphasis on the notion of science not being universal, and instead being specific to the context in which scientific

[306] Stoler, A. L. (2002) pp.89-90

[307] Latour, B. (1991). Technology is society made durable. A Sociology of Monsters. J. Law. London, Routledge.

knowledge is made, used and transported.[308] This is in order to show the contingencies involved in the processes of doing science in particular places. In terms of methodology, this means that as a historian, as much attention will be paid to previous ideas of science at the research institute that both did and did not materialise.

This is important methodologically in order to reflect on the way objects, places and spaces were used to conjure up alternative narratives of what is told and re-told in particular places. In this chapter, and continually throughout the thesis, I reflect on the way the various places, objects and documents became sources for telling the pasts and futures of research.[309] Places as sites of memory for both remembering and forgetting were important avenues to follow.

In addition to attending seminars and conducting interviews, a staff member who also lived and grew up next to the research institute, took me on a number of walks around the research institute. These walks proved methodologically very helpful for new avenues of investigation. When walking around the institute he pointed out for example, where one senior scientist grew his bananas and where his late brother used to grow vegetables in a spot where the electricity generator was now placed; a stark reminder of the life of the land of the research institute before it was built there. This was important methodologically as it opened up the variety of sources I considered to be part of the history of this research institute. In addition to being at the research institute, this research benefited from my experience of living in the city of Kisumu for eight months. It was through this experience that I was able to get to know the urban environment, avoid getting malaria and care for those who did.

Upon first arriving in Kisumu, no one mentioned the past existence or ethos of MOPDRC described in chapters 6 and 7; a place where scientists planned to work collaboratively but also independently and 'self-sufficiently' on the problems of malaria and other protozoal diseases. This thesis is influenced by and sensitive to the

[308] For example Harwood, J. (1993). Styles of Scientific Thought: The German Genetics Community, 1900-1933. Chicago, USA, University of Chicago Press.
[309] For further discussion of this see Serres, M. and B. Latour (1995). Conversations on Science, Culture, and Time: Michel Serres Interviewed by Bruno Latour The University of Michigan Press.

politics of memory. This is the idea that the past and the telling of the past are not neutral. The process of re-telling, celebrating and remembering can serve purposes such as legitimating certain present practices. Therefore, with this in mind I am interested in the way in which the forgetting of certain ways of doing malaria science, may serve in a way as to legitimise present ways of doing malaria research. This is because what is remembered also has implications for our future, and what we consider to be possible. Therefore, what this chapter also does is to look at what the telling of history *does* to the science. The way that the narratives of particular kinds of progress and in science can affect what is and what is not thought possible. In doing so, this changes what is considered to be feasible for the future of malaria research in a particular place.

8.2 THE LIBRARY

Many of the historical documents that constituted my sources were found in the library of the research institute, which served as both library and informal archive for the scientific research institute. A visual description from my field notes offers context to what was available as source material:

> *There was a typewriter on a desk, the old names of the Centre scrawled on books on the shelf, "VBCRC" one of the former names of the research institute faded and lightly stamped into some of the books, library slips with names of scientists now moved on to Nairobi, Dar es Salaam, or deceased. In the back right hand corner of the library there was a shelf with folders containing 'Speeches' and 'University of Nairobi' reports. Under the shelves at the back there were over forty folders of old documents bulging with centre protocols, sketches and educational certificates of scientists. In the adjoining shelf there were large dusty sketched maps rolled up and stored.*[310]

As this description captures, the library was scattered with artefacts and documents from different times. I spent most of my time at the Centre collecting, photographing and cataloguing historical documents, alongside chatting to staff. Being there I was able to read about past routines, scientific plans and hopes at the same time as getting to know the current staff; some new and some who had been at the research institute for a long time. My immersion in both the past and present threw up

[310] From my field notes – 21st July 2010.

unexpected juxtapositions. It is these contradictions and contrasts that I chose to follow throughout the research.

As well as speaking to scientists about their experiences of the changes in science over time, the library was also an interesting avenue for looking at the changes over time. As described in Chapter 5 this library had been seen as crucial to the research institute in the late 1970s. However, by 2009 it was a neglected part of the CGHR. I spent much time in the library as it had become an informal archive. While bulging folders and maps are exciting to the historian, the dusty papers were an unavoidable indicator of the lack of funds experienced by the current library staff. As well as different pasts, the library became an indicator of an ambiguous and multifaceted future of the CGHR. When I asked the Librarian to describe the library when it first started he said that it was "*too small*" and there was "*no computer*", yet he also commented that "*many people*" used the library. For the librarian, one of the two paid Librarians currently at the CGHR, a typical day at work involved "*shelving, receiving newspapers, receiving users, everyday loan of books, classifying and cataloguing*". The librarian remembered that the CGHR used to subscribe to "*core journals*" such as the *East African Medical Journal.* I asked the librarian whether his role had changed over the time he had worked in the library and he said that it was "*always the same...never changed due to lack of promotion".* Although he did comment that with the introduction of computers his job changed from "*manual work to computerised".*

In discussions with the librarian about where the library at CGHR was heading, he offered two potential futures of the library. The reason there are two is because when I asked him about the library he asked me whether I wanted the "*good future*" or the "*bad future".* The librarian's positive version of the future of the library was that "*if I can get enough money to meet the user's needs*" he would make sure to buy "*subscriptions, equipment, scanner and photocopier*" The librarian explained that he particularly hoped to get subscriptions to the "*core journals".* From 2006 they had not been able to subscribe to any journals due to the lack of "*allocation of funds".* The librarian pointed out that the main reason people went to the library was to use a computer or read the newspaper.

The librarian's "*bad future*" of the library was that "*if we cannot get the money we are not going to proceed with the library. People will run away from using the library because they will not get the information."* From my time spent in the library I felt a sense of the frustration and stagnation currently present in the library. While the librarian struck me as passionate about his job and his desires to make this a place of learning as had been planned, his fear of people "*running away*" was evident and justified. The librarian 's descriptions and the feel of the library contrast with not only the librarian's descriptions of the library in the earlier years he was there, but also with the many documents I found in the library about it being a place for learning. When I spoke to an American CDC staff member about basing myself in the library, they found it amusing and asked: "*have you actually been able to find anything in that place?*" The librarian told me that while people from CDC (who had built laboratories and administrative centre on the land) sometimes used the library. However, the librarian commented that there was no financial contribution to the library from CDC, although he did mention that he was grateful because in the past CDC had made "*donations*" to the library, such as printers and computers.

Being at the CGHR I could not help but juxtapose the disjunction between the hopes of those behind the library in the 1980s and the current cautious hopes of the library, with the celebrated excitement of the "*state of the art*" laboratories, described earlier in this chapter. However, this situation of the changing role of the library in scientific institutes cannot be discussed without considering the significant role of computers and the internet. This technological development had indeed transformed access to information previously unavailable to researchers in Nyanza. In a discussion with a Senior Researcher for KEMRI, who has worked in health research in Nyanza for over nineteen years, he explained that: "*in the early days the library used to be very useful, but now with time and electronic journals, now the library has lost much of its function."* The Professor no longer recommends that his Masters students should go to the library to study. Instead he uses electronic access to articles and buys electronic books online, which he considers "*his own personal library".* The Professor, however did express frustration and sadness at the decline in the library at the Centre.

Over the past thirty years at what became known as CGHR there have been dramatic increases in the ability to access research pertaining to public health. However, this has come alongside a decline in the enthusiasm of an updated place of books and resources accessible to researchers at the Centre, and other local health workers and researchers wanting to research further into local disease epidemiologies.

We saw that in the late 1970s there was a situation of local scientists conducting locally appropriate science. However, we also saw that while it was a time of being able to plan their own style of malaria research, these hopes were constrained by the structural context, local, national and global of conducting biomedical research as a Kenyan scientist in Nyanza. When we bring this back to the national context, we see that there were other branches of KEMRI which were working at a much higher budget, conducting international collaborations. When looking at the international context, the scientists needed to shift their local knowledge, to fit into broader, global research priorities.

8.3 Changes in the subjective experiences of doing malaria science

Amongst the scientists at KEMRI there were disparate ways of knowing about malaria. For example, there were entomologists, parasitologists and those who focused on 'health systems'. Following the 'problem' of malaria through these various groups evokes various concerns and imagined futures. For example, the immunologists based their funding proposals upon the idea that a vaccine will 'eradicate malaria', while the entomologists expressed relief at the search for a vaccine because, less optimistic in the search for a vaccine, they felt that their work would remain 'secure' if the search continued for a vaccine, because this would not work and there would still be a need to investigate the insects. Through following the various groups over time I have been struck by the various terrains that become either secure or insecure.

Overall what became apparent through focusing on malaria over time was the political nature in which this narrative would be written. It was clear that the reasons for the high levels of malaria in this particular area of East Africa depended upon who one was asking; reasons range from being near a large lake, poor rubbish collection,

density of parasites, to the iatrogenic effects of trials in the location. Therefore, in a context of high levels of the parasite for malaria, amidst international collaborators, what gets asked and studied? It is these questions that it became crucial to continue to ask. It became apparent that technology played a key role in this.

How technology is conceptualised and the agency it holds when thinking about past events varies greatly within the sociology of technology, ranging from an autonomous force to being socially constructed.[311] While I intended to avoid technological determinism, I also did not think of technology as being solely in material form, and think it continues to be important to think about what technology does. An example of this approach is that when thinking about global health I think that it is important to consider what discussions appear and disappear in light of technological changes. Technology as an anchor for thinking about the past became particularly apparent on early visits to Kisumu in 2009. The KEMRI/CDC malaria laboratory had the capability to perform sophisticated research such as 'polymerase chain reaction (PCR), gene sequencing and micro-satellite work, real-time PCR, lymphocyte subtyping, cytokine measurement, immunological functional assays and malaria parasite cultures.'[312] Clearly, when thinking about the place historically, this level of sophistication of laboratory equipment had clearly not always been the case. Therefore, I began to think about and follow the developments in hardware since the time that the Centre had been set up in 1979. Through initial investigation of the archive materials it became clear that hardware changes were often due to external circumstances, such as the presence of either external funders or research project grants.

What was interesting was the intimate ways that these changes would then affect the practices of doing science. For example, archive documents showed through communications that hierarchies of workplace environments would change with the

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[311] Marcuse, H. (1964). One Dimensional Man: Studies in the Ideology of Advanced Industrial Society, Routledge. MacKenzie, D. and J. Wajcman (1987). Social Shaping of Technology: How the Refrigerator Got Its Hum Open University Press. , Heilbroner, R. L. (1994/1967). Do Machines Make History? . Does Technology Drive History? The Dilemma of Technological Determinism M. Roe Smith and L. Marx, Massachussets Institute of Technology. , Latour, B. (2007). "Can we get our materialism back, please?" Isis**98**: 138-142.

[312] From CDC activities in Kenya website accessed 17/02/2010 www.cdc.gov/malaria/malaria_worldwide/cdc_activities/kenya

arrival of certain technologies.[313] In addition to this, through oral history interviews, certain technologies became apparent as contentious subjects. For example, one interviewee, who had been at the research institute since it was set up in 1979, talked about the '*computer issue*' as if he assumed I would know what that was. When I probed further he explained that over time there had been extensive debates that had occurred with the arrival of computers to the research institute. He explained how this had impacted upon experiences of doing science for the individual scientists (both positively and negatively) and how job descriptions would change.[314]

It was clear that computers had implications for the way in which data collection, analysis and management changed over time. In 1987, KEMRI began systematically introducing computers to research centres.[315] With the advent of computers and, more recently, personal digital assistants (PDAs) local data production events in the field became connected to anywhere in the world deemed suitable for data storage and analysis. As data collection and analysis methods evolve, this changes the role of scientists and the way in which they communicate. Also beyond changing the practice of science, computers change spatial networks of communication and collaboration.

It became apparent that technologies were involved in the moral economy of collaborations. Especially when these collaborations were between KEMRI and a foreign collaborator, where there were often huge financial power imbalances. One KEMRI staff member told me that American collaborators were "*good*" because they donated their old computers.[316] It was also noticeable that advanced technologies would make visible the sometimes uncomfortable disparities in research funds. We can see that there were material changes in the research institute that changed individual scientists' subjective experience of dong science in this particular place. In addition to this, the scientists themselves were aware of the moral economy involved

[313] The Kenya Medical Research Institute, VBCRC, Memo from Chief technologist to all concerned re: re-organisation of laboratories and deployment of technical staff, 1999, Kisian Archive, Kisumu, Kenya

[314] The Kenya Medical Research Institute, VBCRC, Memo from Chief technologist to all concerned re: re-organisation of laboratories and deployment of technical staff, 1999, Kisian Archive, Kisumu, Kenya and interview with staff member 7th September 2010, Nyanza, Kenya

[315] Washington DC National Academy of Sciences, Bridge Builders: African Experiences with Information and Communication Technology,1996

[316] Interview with staff member, 7th September 2010, Nyanza, Kenya

in the using and sharing of the technology.

When we put the two themes described so far together, that of technology and malaria research, we can see that technology changes over time, which impacts upon job roles and workplace hierarchy. This is particularly so amidst international collaborations with inequalities of research funds and therefore access to technology. Who gets to ask about what is known about malaria research, and who has the resources to do so? For whose purposes is malaria research being conducted? With the high capacity laboratories and under-resourced library one cannot help but ask whether the purpose of capacity building is based upon increasing the capacity for data collectors or intellectual scientists.

8.4 Living on the land

Following the shifts and changes in research over time within the research institute is one way of considering change. However, another way of thinking about changes over time at this research institute is to think about the land upon which the research institute was built. In Chapter 5 it was described that a larger piece of land was required to build the research institute. The acquiring of this land involved the scientists liaising with local politicians and also people who were giving up their ancestral land in order for the research institute to be built. A key change of the use of the land, following the building of MOPDRC on this land, has already been described in this chapter; the building of US CDC laboratories on the same plot of land. As described above, this considerably changed the approach to research at this site, from a place of plans for conducting national research, to a place for testing drugs, vaccines and bed nets. Another way of thinking about the history is through following further the story of the land.

I became particularly interested in the land when I found there was a box, still stored in the library of CGHR described as the land acquisition files. Here there were stories of trips to Nairobi, the capital, for negotiations with the Ministry of Health for money for compensation for people who had been previously living on the land as described in chapter 6. It appeared through looking at these documents that there had been a land committee formed by people who had previously been living on this land when

the move to the new headquarters was planned in 1980.

Having become aware of the land committee, the next step was to find those (still alive) who had been on the committee. Two members of the land committee were interviewed as well as two people who were not on the land committee but had grown up on the land and now had careers with KEMRI. Those interviewed with regards to the land were identified from the minutes of meetings regarding the purchase of the land. The people interviewed were asked about their life histories, family histories and memories of the purchasing of the land as well as participating in an open-ended discussion. Given the significance of the building of this research institute into particular people's personal biographies, it was important to interview these people to understand the changes of the research institute over time. In doing so, this helped to broaden out notions of progress and development in science.

For Jared (a member of the land committee), the reason that the research institute was built at Kisian was attributed to Robert Ouko, who had been the local MP at the time, and was remembered as somewhat of a local hero: "*He was the one who realised there were many mosquitoes because of the swampy place...this is why it was built here*".[22] As Jared recalled, "*...So when the building was being put up we were very happy because the malaria will finish. Finish the illness of the malaria as the mosquito has always been plenty.*"

Through interviews with those living on the land, it became apparent that there had been a mixture of feelings in response to the prospect of setting up a research institute. For some it created excitement, as the arrival of a research institute was thought to bring a solution to the issues of high unemployment in the area. However, at the same time, for some this meant that they would need to move from the ancestral land that they had grown up on, and were also using to grow vegetables and cassava and for the grazing of their animals.[20]

[22] Interview with Land committee member 2nd September 2010, Nyanza, Kenya

[20] Shipton, P. (2009). Mortgaging the Ancestors: Ideologies of Attachment in Africa Yale University Press

I found out more about the multiple layers of the past of this research institute through taking photographs of the people I interviewed. When posing for a photograph for me, Jared turned proudly to look at his grandchildren; this was just after he had asked me to sponsor some of his grandchildren or take them to England with me for education as he was concerned about levels of employment.

In one particular instance, taking a photograph proved to be extremely useful. In every photograph taken of the secretary of the Land Committee, he was tightly clasping a blue folder. Through further discussion it appeared that this folder contained the committee's "*clean*" version of the Land Committee's story of the history of the Centre. This is discussed further in Chapters 6 and 8 but was raised here to highlight the many ways in which the practice of taking photographs spoke to me as a researcher who was interested in local debates and the multiple ways in which the past(s) becomes retold.

On his lap, Jared is holding the blue folder. I noticed that in every photograph I took of Jared he was tightly clasping the folder. I researched further into the contents of the blue folder. In reading the documents in the folder it became apparent that this folder was about Jared's ideas of the past and the future in relation to the land at Kisian. This folder, printed and bound was called the 'Kisian Community Collaborative'. The folder contained records of recent meetings and future planned meetings. The binding of the document suggested some form of completion or perhaps it was in preparation for one of the meetings. Future activities included a career day with schools, school competitions and campus awards.

In the letter written to CGHR, of which a copy was held in the blue folder Jared outlined the key issues which the Land Committee were concerned with. The main one of which was "*employment*" and he uses history to support his argument.

> *In brief we have the pleasure to flash back and give you the history of this important issue. Our land above was acquired for the purpose of establishing the centre for research in malaria and other protozoal Diseases. Our people co-operated fully to give their land for the said purpose. They were compensated for the same gesture. And we know that the project is now a national more than that international project*.

In the letter, Jared refers to an archive document of a letter written, in the 1980s, from the District Commissioner to the Kisian Land Committee. In this official letter the people on the land were promised fair compensation and future employment. After outlining this letter, Jared writes "*It is on the strength of the said letter that we find it important to revisit the issue as history always repeats itself by telling us 1. Where we came from 2. Where we are and 3. Where we are heading to*."

He goes on to write "*Our questions therefore is, was establishment of this project in our are a blessing? If the same is affirmative, then how many have been employed? Could head count be taken? But if the same is negative, then what is the way forward?*"

"*It is therefore our humble opinion that where there was assurance and one party feels short changed, their demand cannot be wished away. Let the same be addressed and solution be made. This project is the pillar of development to this area therefore our complain is anchored on development.*

For this to happen, we think that a committee from both sides (project and community) be formed to address this issue.

And so we pray." [317]

This narrative of the land on which the research institute was built is used here to complicate the notion of progress and science. By focusing on a particularly interested group of people, we are able to see the extent to which developments in science are perceived from certain vantage points. What is also shown in this section is the way in which the building of this malaria research institute was and was not linked to malaria. In some regards, the reason this research institute was able to be built in this place was nothing to do with malaria. It was to do with the fact that the local politician was open and willing to see the potential for employment in the area. In this regard, it makes the malaria institute not much different from the sugar factory built down the road at a similar time. However, at the same time, malaria was also crucial to the building of the institute. In the interviews the historical presence

[317] Letter from Land Committee to CGHR 2010

of malaria for people who gave up that land filtered through the interviews. According to them, it was a disease that they had dealt with by attempting to avoid it on a daily basis throughout their lives. They had memories of colonial interventions, personal strategies and more recent technologies, such as bed nets, that attempted to address malaria. So while in some ways this was just another building that offered the potential for vitally needed employment, it was also a place that was instilled with the hope of getting rid of a continually felt presence for people who gave up their land. The reactions of these people over time to the presence of this research institute, and also the continued presence of malaria and absence of jobs, are important here for conceptualising the research institute. It does open up further the tensions between developments in science and developments more broadly. For as authored by the land committee, their concerns are also anchored to notions of development. This is part of the broader aims of the thesis to contextualise the science that was done with the place in which it was done in.

This section focused particularly on the land that the MOPDRC was built on which became the CGHR. This is done in order to further complicate the relationship between science and development. It draws largely on oral history interviews and documents collected by people who gave up their ancestral land in order for the research institute to be built. They have, over the past thirty years, remained highly interested in the progress of the research institute, therefore their interpretation of the developments over time are important ones as a historian to listen to and contextualise.

8.5 Is the science still anchored in the place?

Another way of exploring the way in which research at the institute has changed over time is to look at the publication outputs. This next section summarises the shifts in research from the 1980s onwards through the analysis of publications.[318] In Kisumu in the latter part of the 1980s there was a shift in research focus away from vector control of mosquitoes. For example, publications that came out around this time

[318] In this brief synopsis I use analysis of scientific publications coming from the Centre between 1980 and 2009 on malaria in order to give an overview of the general trends in research that have come out of the research centre.

were directed towards assessing resistance of the malaria parasite to Chloroquin (drug) and pyrimethine (pesticide),[319] or evaluating a test for measuring the resistance of the malaria parasite to Chloroquin.[320] By the end of the 1980s the focus continued to be on drugs, specifically the development of new drugs. For example, there was a pilot study testing the use of Chlorproguanil for treating malaria as an alternative to Chloroquin.[321] During the publications of the late 1980s, the focus on mosquitoes was largely a reductionist approach, investigating specifics, such as the genetics of the mosquitoes. Examples of these publications include those exploring the life span of mosquitoes in the area[322], the use of a DNA probe for differentiating species of mosquitoes[323] and determining the malaria parasite in mosquitoes.[324] This ties in with the global trends of a focus on genetically modified mosquitoes at the time.[325]

A key area of research in Nyanza became that of vaccines, and the various immunological work involved in the process of developing a vaccine. The province became a popular site of research for vaccines from the late 1980s right through until 2009, and there was immunological work on the relationship between the malaria parasite and antibodies. This work was done with the intention of contributing to the development of a malaria vaccine.[326]

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[319] Masaba, S. C. and Spencer, H. C. (1982) Sensitivity of Plasmodium falciparum to chloroquine in Busia District, Kenya. Trans R Soc Trop Med Hyg. **76**, 314-316 Spencer, H. C., Masaba, S. C. and Kiaraho, D. (1982) Sensitivity of Plasmodium falciparum isolates to chloroquine in Kisumu and Malindi, Kenya. Am J Trop Med Hyg. **31**, 902-906 Spencer, H. C., Kariuki, D. M. and Koech, D. K. (1983) Chloroquine resistance in Plasmodium falciparum from Kenyan infants. Am J Trop Med Hyg. **32**, 922-925 Steketee, R., Brandling-Bennett, A. D., Kaseje, D. C., Schwartz, B. and Churchill, F. C. (1987) In vivo response of Plasmodium falciparum to chloroquine in pregnant and non-pregnant women in Saiya District, Kenya Bull World Health Organ. **65**, 885-890

[320] Spencer, H. C., Masaba, S. C., Chulay, J. D. and Nguyen-Dinh, P. (1983) Field evaluation in Kenya of a 48-hour in vitro test for Plasmodium falciparum sensitivity to chloroquine. Am J Trop Med Hyg. **32**, 916-921

[321] Watkins, W. M., Brandling-Bennett, A. D., Nevill, C. G., Carter, J. Y., Boriga, D. A., Howells, R. E. and Koech, D. K. (1988) Chlorproguanil/dapsone for the treatment of non-severe Plasmodium falciparum malaria in Kenya: a pilot study. Trans R Soc Trop Med Hyg. **82**, 398-403

[322] McLain, D. K., Collins, F. H., Brandling-Bennett, A. D. and Were, J. B. (1989) Microgeographic variation in rDNA intergenic spacers of Anopheles gambiae in western Kenya. Heredity. **62 (Pt 2)**, 257-264

[323] Collins, F. H., Mehaffey, P. C., Rasmussen, M. O., Brandling-Bennett, A. D., Odera, J. S. and Finnerty, V. (1988) Comparison of DNA-probe and isoenzyme methods for differentiating Anopheles gambiae and Anopheles arabiensis (Diptera: Culicidae). J Med Entomol. **25**, 116-120

[324] Beier, M. S., Schwartz, I. K., Beier, J. C., Perkins, P. V., Onyango, F., Koros, J. K., Campbell, G. H., Andrysiak, P. M. and Brandling-Bennett, A. D. (1988) Identification of malaria species by ELISA in sporozoite and oocyst infected Anopheles from western Kenya. Am J Trop Med Hyg. **39**, 323-327

[325] Ridley, R. G. and Fletcher, E. R. (2008) Making a difference: 30 years of TDR. Nature: Microbiology **6**, 401-407

[326] This list is so long it has been put into appendix 14.

As well as a focus on vaccines, a new and significant area of research in the 1990s, which had a global policy impact, was evaluating the use of insecticide treated bed nets and curtains. For example, some were evaluating the effects of the use of these bed nets on the prevention of malaria.[327] Other publications explored whether the use of bed nets and treated curtains increases the tolerance of mosquitoes to the insecticide used over time.[328] Between 2000 and 2009, many publications continued to be concerned with the evaluation of bed nets.[329]

When considering the shifts in research focus over time it becomes apparent that the research centre is very different from what it was intended to be in the early years between 1979-1981 as described in chapter 6. Rather than being a place where science was going to be used to better understand the specific context, instead it appears that the location is being used as a test site, where the aims of the projects are being guided by desires from afar. The notion of the nation in the science planned appears to have been lost with the increase in global projects. Not only has this been lost, but as I wrote earlier in the chapter, without delving deeper into the archives, the memories of MOPDRC are very hard to find.

8.6. SUMMARY

[327] Sexton, J. D., Ruebush, T. K., 2nd, Brandling-Bennett, A. D., Breman, J. G., Roberts, J. M., Odera, J. S. and Were, J. B. (1990) Permethrin-impregnated curtains and bed-nets prevent malaria in western Kenya. Am J Trop Med Hyg. **43**, 11-18Beach, R. F., Ruebush, T. K., 2nd, Sexton, J. D., Bright, P. L., Hightower, A. W., Breman, J. G., Mount, D. L. and Oloo, A. J. (1993) Effectiveness of permethrin-impregnated bed nets and curtains for malaria control in a holoendemic area of western Kenya. Am J Trop Med Hyg. **49**, 290-300Oloo, A., Githeko, A., Adungo, N., Karanja, D., Vulule, J., Kisia-Abok, I., Seroney, I., Ayisi, J., Ondijo, S., Koech, D. K. and Abdullah, M. S. (1996) Field trial of permethrin impregnated sisal curtains in malaria control in western Kenya. East Afr Med J. **73**, 735-740Kachur, S. P., Phillips-Howard, P. A., Odhacha, A. M., Ruebush, T. K., Oloo, A. J. and Nahlen, B. L. (1999) Maintenance and sustained use of insecticide-treated bednets and curtains three years after a controlled trial in western Kenya. Trop Med Int Health. **4**, 728-735

[328] Vulule, J. M., Beach, R. F., Atieli, F. K., Roberts, J. M., Mount, D. L. and Mwangi, R. W. (1994) Reduced susceptibility of Anopheles gambiae to permethrin associated with the use of permethrin-impregnated bednets and curtains in Kenya. Med Vet Entomol. **8**, 71-75Vulule, J. M., Beach, R. F., Atieli, F. K., Mount, D. L., Roberts, J. M. and Mwangi, R. W. (1996) Long-term use of permethrin-impregnated nets does not increase Anopheles gambiae permethrin tolerance. Med Vet Entomol. **10**, 71-79Vulule, J. M., Beach, R. F., Atieli, F. K., McAllister, J. C., Brogdon, W. G., Roberts, J. M., Mwangi, R. W. and Hawley, W. A. (1999) Elevated oxidase and esterase levels associated with permethrin tolerance in Anopheles gambiae from Kenyan villages using permethrin-impregnated nets. Med Vet Entomol. **13**, 239-244

[329] This list of publications is so long it has been put into appendix 15

Overall the thesis showed that not only had the imaginations of what science could do over time changed but that the memories of the previous political imaginary of the MOPDRC group has been largely erased from popular memories of doing science in the area. This was especially so since the building of the US CDC laboratories on the same piece of land as MOPDRC in the 1990s. In this sense it is important to think about the way in which the remembering and forgetting of ways of doing science serves to legitimate certain present ways of doing science. It is also concerned with the way in which what is remembered and forgotten about science has implications for our future and what we conceive of as being possible. Therefore, what is remembered has implications on the future questions asked about the world, and in the context of health, specific diseases.

Through anchoring on various narratives of malaria, technology and land this chapter began to highlight the complicated relationship between science, place and development. In conclusion I would say that a key way in which they changed were the way that the visions for malaria science became dislocated from the context of Kisumu and Nyanza and at times Kenya over time. This thesis has shown that the 1970s was a particular time of doing research in Kenya. A time at which Kenyan scientists envisioned making malaria science which was relevant to the context of Kenya. They planned on being collaborative with the international community yet also self-sufficient. Over time the vision of science coming from this building changed to a 'global' vision, where the purposes of the science have become dislocated from the context of Kisumu. Not only have these visions changed, but the past memories do not serve the purposes of the 2010 CDC dominated context of doing science. I argue that to ignore the past visions of doing science in Kenya for the benefit of Kenya serves to legitimate the practices of 2010. Where the US CDC dominates the visions of what science can do from this particular building. With the erasing of the past, the presence of CDC in the practice of biomedicine takes the form of neutral 'capacity building' as opposed to impacting upon the questions which are asked and the knowledge collected about malaria in this particular context. To assume the possibility of disassociating biomedical science from politics is to stay ignorant of the way in which science is used by different people for different purposes.

CHAPTER 9. DISCUSSION AND CONCLUSION

This thesis has shown that the 1970s was a particular time of doing research in Kenya. A time which Kenyan scientists envisioned making malaria science which was relevant to the context of Kenya. They planned on working collaboratively with the international community yet also being self-sufficient. Over time the vision of science coming from this building, KEMRI in Kisumu, changed to a 'global' vision, where the purposes of the science become dislocated from the context of Kisumu. While the story of local approaches to science being displaced by global, transnational science is not necessarily new, what this thesis has done is to show why it was that the local became eclipsed at this time. How this was done is made clear through this chapter as follows. It begins by outlining the unique methodological approach taken in this research, which enabled the lesser-heard stories of science to come out. It then outlines the way that the research institute was emplaced within the broader social, economic and political context. The third section of the conclusion makes the nuanced approach to space taken in this research explicit in order to show how this tied all the different facets involved in the building of a research center together – from the purchasing of land to the drawing in of funds.

9.1 LISTENING TO LESSER-HEARD STORIES

This thesis used a methodological approach that enabled the incorporation of stories often lost in the histories of science. While there have been in-depth studies of scientists, this level of in-depth analysis is rarely done with a specific focus on biomedically-trained non-western scientists, especially in Africa. Instead, work from anthropologists, for example, tends to focus on 'traditional healers' or other professions.[330] This gap in the history of science is interesting given that historians of

[330] LAST, M. & CHAVUNDUKA, G. L. (Eds.) (1986) The Professionalisation of African Medicine Manchester, Manchester University Press.

Africa have highlighted the value of local intellectual debates.[331] Therefore by focusing on a particular group of scientists we were able to learn about a transnational history from a particular vantage point. For example, the first two directors of this research institute were sent to London to be trained at the LSHTM in the late 1960s, and then returned back to East Africa as directors and secretaries on completion of their diplomas. Therefore, for the scientists of the 1970s in Kenya, some had worked during colonial times, while other younger scientists embraced the new-found opportunities available for African scientists following independence. On a personal level all had experienced the shift from colonialism to independence, which of course meant different things to different people. However, an exploration of their experiences adds a particular perspective to broader histories of transnational medical research. Alongside focusing on the scientists, as we saw in chapter 8, the methodological approach taken in this research was also closely tied in with the notion of 'space'. While this is discussed further later, here if has relevance for pointing out the way in which objects and architectural arrangements also fed into the methodological approach to telling this history and listening to narratives which are not usually incorporated into scientific histories.

9.2 Locating research in the political and economic context

This thesis has located the postcolonial medical research within the political economic context of Kenya and East Africa, rather than seeing it only from a global health perspective, which has been the general trend. Chapter four, though a summary of the history of Kenya showed the complicated relationship between science and the development of Kenya as a nation during the early twentieth century. Up until the 1970s medical research had been organised in Kenya on a regional level with East Africa. It was also motivated by colonialism having been set up by the British Colonial Medical Officers. With the collapse of the EAC and thus medical research

[331] LONSDALE, J. (2000) Agency in tight corners: Narrative and initiative in African history Journal of African Cultural Studies 13, 5-16. SCHUMAKER, L. (2000) Malaria IN COOTER, R. & PICKSTONE, J. (Eds.) Medicine in the Twentieth Century Amsterdam, Harwood Academic Publishers

collaboration in the 1970s, it makes this a crucial time for the re-organisation of science in the region. However, as chapter four showed, extensive historical analysis of this period of medical research in Kenya finished in the 1970s.

Through a detailed analysis of archival material in chapter 5 this thesis showed how research in the late 1970s went from being a regional to a national endeavour and examined how science was characterised in the national context of Kenya at the time. This chapter showed that there were conflicting notions of the relationship between science and the nation at the time. On the one hand national level archival material showed the way that the science was intended to be produced as being useful to all of Kenya. This was in contrast to colonial approaches of ignoring rural areas, for example. On the other hand, while intending to be relevant to people in Kenya, the national research institute was set up as a parastatal. This means that it was heavily reliant on foreign funds, which in tern means that the science produced would necessarily be heavily reliant on the desires of foreign interests.

This national level paradox was explored at a local level in chapter 6 through the focus on one branch of KEMRI in Kisumu, Nyanza Province. This branch was the one branch of KEMRI not funded by foreign funds. What becomes apparent is that the 1970s was a time of great hope for the scientists working there. They set up a series of locally relevant research studies where they were able to come up with research questions specifically relevant to the context they were working in. Alongside the hopes for the scientific research studies there were also hopes for a useful library and guest house. However, this chapter also showed that when this research institute was placed in the broader colonial context it was also a time of being in 'tight corners'. This was especially the case with regards to the number of well-trained scientific staff available to conduct the research studies and also the funds available to do the research, despite the scientists' attempts to be as economic as possible at what was a hard time.

The findings of this research are important and extend the historical literature on medical research in Kenya further. Before writing this thesis, the history of KEMRI

had been touched upon by only a few historians. Each of these historians used the research institute as an example, to fit into a broader narrative, rather than as a *narrative in itself*. Ombongi, as part of a history of the changing interface between science and the state in post-colonial Kenya, charted the shift from the origins of KEMRI as being a place of 'South-South' collaborations to in 2005, being somewhere where science was "*supported financially from the North, made up by key researchers from the North, and a few collaborators from the South, and conducted in 'fortified enclaves' which tap research material from communities near-by".*[332] Iliffe, while writing a social biography of East African doctors, touched on KEMRI as illustrative of the capitalist shift of science in Kenya, and referred to KEMRON the failed AIDs drug.[333] Bethwell Ogot, the renowned Kenyan historian has also touched briefly on KEMRI. Like Iliffe, Ogot also made reference to the failed AIDs drug, and was extremely critical of the African researchers,

> *The KEMRON and Pearl Omega episodes cannot be explained in terms of the historical and political context of colonialism. They appear to be nothing but manifestations of naked greed on the part of political leaders who feel no qualms about exploiting their own people, including the sick, for personal gain. The stories also confirm the existence of African researchers on hire by anybody, local or foreign, who is willing to pay the price![334]*

The historians outlined above did not use KEMRI as a central narrative, they only touched on the institute as illustrative of broader themes. As a result, each of these histories that included KEMRI emplaced the research institute neatly into broader narratives of the corruption and neoliberalism of science in Africa.[335] Rather than emplacing the research institute within a wider narrative, what this thesis has done instead it is to look more closely in order to learn a more complex story of multiple narratives surrounding KEMRI. As a result we have learnt that the story is far more

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Ombongi, K. (2011). The Historical Interface between the State and Medical Science in Africa: Kenya's case. Evidence, Ethos and Experiment: The Anthropology and History of Medical Research in Africa. P. W. Geissler and C. Molyneux. Oxford Berghahn Publishers.

[333] Iliffe, J. (1998). East African Doctors: A History of the Modern Profession Cambridge, Cambridge University Press.

[334] Ogot, B. (2009). The publics of public health: reflections on the diverse and changing notions of 'the public', in relation to the production of medical knowledge and health in contemporary Africa The Publics of Public Health Kilifi, Kenya

[335] Ferguson, J. (2006). Global Shadows. Africa in the neoliberal world order Durham Duke University Press.

complex than is often told. While Kenya as a country did indeed follow a route more open to foreign investment than neighbouring Uganda and Tanzania, this does not mean to say it was the hope of every scientist engaged in the effort of building post-colonial scientific research institutes. Yet without historical analysis of this period, these hopes of the 1970s have been forgotten in the historical literature.

Sivusandaran has discussed in his reflections of methodology in the history of science, that historians have often been restricted by the category of the nation. For example, historians have looked at the way in which science has been used in the service of anti-colonialism, yet in doing so have ignored the more nuanced individual aspirations of particular scientists. For Sivasundarum, this means that other developments, such as the transnational context of independence, are often lost in accounts that focus too much on the category of the independent nation.[336] In order to avoid this over emphasis on national categorisation, in this research the analysis focused on a particular research station and the scientists who worked there. Following their travels and previous experiences, it unravelled the transnational context of that Sivasundarum is referring to.[337] As opposed to fitting the research institute into the broader popular narratives of Kenya such as corruption, this thesis complicated these narratives by interrogating the complex multifaceted history of the institution, focusing on its non-heterogeneity by using oral histories to listen to the hopes and projection of futures of the Kenyan researchers. So while this contributes to a more nuanced understanding of the history of KEMRI, this could also be considered when writing narratives of Kenya more broadly, beyond scientific research institutes, to other organisations in Kenya that may have been packaged into the narratives of a capitalist country.

[336] Sivasundaram, S. (2010). "Sciences and the Global: On Methods, Questions, and Theory " Isis **101**(1).
[337] Sivasundaram, S. (2010).

9.3 Problematising aspects of space

This thesis has contributed to literature on colonial and postcolonial medicine by using the notion of space in a creative way. As well as using space in a geographic sense, it has also been used to pay attention to everyday experiences of those who inhabit the landscape, along with architectural dynamics and ideas of a nation. By linking these broad notions of space in with biomedical research it takes the focus beyond that often taken in colonial and post-colonial medical histories. As well as putting KEMRI into the broader political and economic context of Kenya, this thesis also tied the research station in Kisumu into the specific geographic context it was in. The research station was tied not only into the broader global post-colonial context of health research but also the specific context of doing science in Nyanza Province in chapter 7. What becomes clear from this chapter is that post-independence, Nyanza Province had become increasingly interesting to researchers. One particular group of interest was that headed by UK scientists eager to continue their 'overseas' careers in the post-colonial context. As such they planned a long-term well funded project in Nyanza Province, which ultimately turned out to not be of health relevance to the specific context of Nyanza Province. In addition to this the WHO had also become increasingly interested in areas with high levels of malaria in order to test new products as a result of pressure from industry at the end of the global malaria eradication project. Ultimately this also proved of little relevance to the health of people in Nyanza and, if anything, led to increased levels of malaria.

This thesis focused on a professional group and an institution that are lesser known in the broader histories of global malaria history. The majority of histories of malaria research have focused on the same dominant institutions, as described in Chapter 2. Or there are certain places about which histories are written or referenced, such as Italy, in order to show the successes of domestic approaches to malaria research.[338]

[338] Snowden, F. (2008). The Conquest of Malaria: Italy, 1900 - 1962. USA, Yale University Press.

By focusing on a particular place that has not been focused on before with regards to the history of malaria, further light on the global history has been shed. In doing so this thesis has also become, in some ways, another history of the role of the WHO, especially in Chapter 7. However, instead of writing about the WHO and looking outwards, this research used a place to look back and forth between the different institutions and their relationship to the place in which they were located. In doing so we were able to gain not only a history of this particular place, Nyanza and the malaria branch of KEMRI, but also a more nuanced role of the WHO in such places.

With an emphasis on the importance of space, which reveals its possibilities beyond geographic categories, chapter 8 looks at Nyanza Province with hindsight from the perspective of 2010. This uses a number of specific places at the research institute to show what has changed over time, such as the library, a building vital to the early hopes of the research institute but which has now declined. Chapter 8 also focused on the land that the research institute was built on in order to show how it has changed from the perspective of people living there, revealing how they gave up the land for particular reasons, such as the hopes for employment and the reduction of malaria. Ultimately chapter eight asks whether the science is located in the place of Nyanza. It shows through following the scientific outputs over time that science is no longer specifically relevant to the place.

9.4 Placing malaria research

Malaria is a problem of parasites, mosquitoes, sanitation and socio-economic inequalities. The weight attached to each of these problems has implications for how malaria is dealt with by scientists, global funding bodies and those suffering from the symptoms.[339] While the malleability of the definition of the problem of malaria continues, changing global health architectures, technological possibilities and immunological transformations mean that the conditions for the definition of malaria over time are assembled in various ways.

The ways in which the general changes to the practice of malariology impact the temporal and spatial arrangements of malaria research were described in chapter 8. Recommendations of doing 'local' research rather than universal research become complicated spatially. For example, when one data collection event can become connected to another part of the world within seconds. This thesis has shown the complexities of attempts at doing local research amidst a transnational context of doing science. What it has also shown is the value of thinking about what gets lost along the way amidst these changes. Through being specific to a particular place, this thesis has reminded us of what a potentially exciting time there was in the late 1970s in Nyanza Province for malaria researchers, with hopes for a guest house, vegetable garden and fields stations across the country, which are highlighted by their narratives. Without such in-depth historical investigations using such unique sources, such past-imagined futures would be forgotten. This thesis showed the way that the knowledge of biomedically-trained Kenyan scientists at times was not able to enter into the broader global debates of malaria science. This illustrates the power dynamics at play and the value of unpicking the quieter narratives of approaches to dealing with malaria. One can only therefore imagine the extent of other knowledge of malaria that does not become close to being incorporated global discourse.

9.5 SUMMARY

This research employs a richer conceptualisation of space and place in order to broaden the discussion around global biomedicine to incorporate experiences that might not otherwise be included in biomedical discussions, such as the experiences of people who gave up their ancestral land. This level of place has been tied in with broader context of national and global debates. This approach has helped to make visible the multiple power dynamics at play in transnational research and shown the complex ways in which the questions asked about malaria research in a particular place can, over time, become dislocated from the relevance of that place. This serves as a valuable reminder of the role of history and place in the telling of transnational science.

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