

**THE WOMB AS TARGET:
Linking Procreative Sex with Premature Death and Epidemics in Modern Day Ghana¹**

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ABSTRACT

This brief survey of policy and practices over the last five decades will help to expose how it is that gross oversimplifications about Africans, purveyed at the highest levels of international discourse, inhibit the efficacy of Ghana's current public policy and implementation of measures to fight epidemic disease and early mortality. Putting current HIV/AIDS policy of deterrence in an historical context illuminates how the national response to contagious diseases and premature mortality is limited when regarded chiefly as the direct effect of socio-sexual dysfunction. The evidence assembled here reveal that attention to women's lack of social empowerment and the purported irrationality of African social norms deflects attention from key facts about the pathogenic and economic conditions responsible for chronic illness and premature death in Ghana. The global health policy presupposes that AIDS requires primarily behavior modification of individuals and access to imported pharmaceuticals, and thereby seriously curtails more effective treatment and prevention strategies including a multi-sectoral modification of sanitation infrastructure, and improved urban living conditions. More judicious distribution of primary health care facilities, improvements in subsistence agriculture, and adequate nutritive caloric intake for pregnant mothers and school children, are important considerations in the ethics of AIDS care and prevention.

KEY DESCRIPTORS: HIV/AIDS prevention, reproductive health, public and community health policy, fertility studies, racism.

INTRODUCTION

Gender sensitive scholars should beware of global discourse tracing the primary cause of contagion and premature death in Africa to indigenous women's ignorance and lack of social empowerment. Treating African women's reproductive power as pathogenic and destructive to society has been a well established theme throughout

¹ See also Lauer (2006).

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the history of medical practice in colonial West Africa³. It can be argued that the Victorian fixation on a purported need to monitor, correct and control African sexual behavior through behavior modification schemes has perpetuated incoherencies in Ghana's public and community health policy and practice to this day⁴.

In Ghana, policies established by British colonial administrations as long ago as the 1880s still dominate public sector and international spending on public health care delivery. This is the conclusion drawn by Ghanaian medical historian Stephan Addae (1996: 79, 392, 480) who has carefully documented the phenomenon:

When the first African government took power it inherited a medical service which had evolved over some 70 years. ... Its most important weaknesses were early recognized. . . . in the . . . relative neglect of preventive medicine; sanitation and preventive health, housing, abolition of congested areas, elevation of general economic status of the people and dietary improvement . . . in spite of the modern advances in curative treatment . . . a similar situation exists today . . .⁵

Antiquated strategies to control epidemics are reinforced today by the orthodox global AIDS funding agenda. Specifically, these strategies put heavy stress upon the need for remedial education of mothers regarding sanitation and infant care, private/public partnering, volunteerism, segregation and mass education campaigns designed to reform sexual behavior⁶.

This paper observes certain parallels between the way public health risks are handled in Ghana today and the way threats of contagion have been handled by government agencies in Ghana in the past. Two historical phases of Ghana's public health care policies will be sketched as it has been documented by the celebrated Ghanaian medical historian Stephan Addae (1996). The first phase began in the 1880s, and aspects of early colonial policies, which remain with us today in AIDS prevention

³ Sander Gilman (1985: 235) interprets this as "reflect[ing] the general 19th century understanding of female sexuality as pathological: the female genitalia were of interest partly as examples of the various pathologies which could befall them but also as . . . a pathological summary of the entire individual." He demonstrates that in the Great Evolutionary Chain of Being presupposed by the medical establishment of the 19th century, female Africans were ranked closest of all to the apes; empirical evidence was demonstrated by sketches of their excessively large private parts and buttocks, heavy facial structure, swarthy skin tone, body mass, ear shape, skull and jaw size. Just above them were European prostitutes of the lower classes. See also A. R. JanMohamed (1985) the demonizing the cultural Other.

⁴ These include the WHO, UNAIDS, United States PEPFAR Initiative, the Gates Foundation, and others.

⁵ The thesis of this paper may be understood as an application and extension of Professor Stephan Addae's main thesis highlighted by this passage.

⁶ The label "education prophylaxis" is used by Addae (1996) p. 147. Eileen Stillwaggon (2006) especially pp. 134-157 reveals more generally how the details of institutionalized scientific racism burden African countries' health care administrations.

policy, will be spelled out in sections 2 and 3. The second historical phase, treated in Section 4, concerns the population control studies that dominated statistical, social and epidemiological research in Ghana during the 1960s and 1970s. Remarkable continuity exists between the focus upon fertility and demographic studies in the first two decades following Independence, and the focus imposed more recently by the global HIV/AIDS research establishment over the last two decades. This brief survey of policy and practices over the last five decades will help to expose how it is that gross oversimplifications about Africans, purveyed at the highest levels of international discourse, inhibit the efficacy of Ghana's current measures to fight epidemic disease and early mortality.

The epidemic surveillance methods and treatment strategies discussed here were culled from two publications produced in 2005 by the Ghana Health Service (*National AIDS/STIs Control Programme HIV Sentinel Survey Report 2004*, and *Policy Implementation & Interventions Report 2005*). The policies and problems predominating from 1880 to 1960 and discussed here were gathered from the recently acclaimed medical historiography of Stephen Addae (1996). Details of surveillance surveys monitoring procreative sex in the 1960s and 1970s were gathered from contributions to a major international conference of the Population Impact Project at the University of Ghana (1986). Features of the current geo-political context for national health popular discourse have been gathered from local newspapers, high profile international medical journals (including *Nature*, *JAMA*, *The Lancet*, *British Medical Journal*, *Science*) as well as from *CNN* and *BBC World Service* regular broadcasts, and literature produced by health service management and marketing agencies allied with the HIV/AIDS orthodox research industry developed in the last two decades.

Section 5 reviews pertinent facts about the pathogenic causes of human immune deficiency syndrome which typically go unmentioned in these media. The resulting gaps in public health education in Africa suggest a pervasive misrepresentation of the biomedical facts concerning the perpetuation of chronic and fatal illnesses troubling Africans⁷. In conclusion, §6 gives a brief sketch of the multi-sectoral approach proposed by a concept paper written by a former Director-General of the Ghana Health Service, Agyeman Badu Akosa, which was designed to structure a national campaign to mitigate the conditions known to induce chronic epidemics (Akosa, 2006). Under Akosa's aegis, the Ghana Health Service's current progressive policies for women's reproductive health and for improving children's nutrition and health through a school feeding programme and sanitation exercise focused wholly upon improving sanitation and nutritional intake. This inter-sectoral public service approach contrasts starkly with the emphasis on individuals' sexual behavior modification and access to imported antiretroviral drugs, to which the Ghana AIDS

⁷ The label "education prophylaxis" is used by Addae (1996) p. 147. Eileen Stillwaggon (2006) especially pp. 134-157 reveals more generally how the details of institutionalized scientific racism burden African countries' health care administrations.

Commission remains attached in compliance with directives of the global orthodox HIV/AIDS industry.

Structural adjustment policies, mandated in the early 1980s by the International Monetary Fund and the World Bank, have contributed to Ghana relying outright on aid for social services including health care. Economically, fractured nations in Africa remain dependent upon foreign fiscal directives, which include neo-liberal demands to remain open and pliable to international business marketing initiatives, including major pharmaceutical companies⁸. In consequence, highly indebted poor countries like Ghana remain hamstrung by labor laws, health care facilities, sanitation infrastructure and drug import protocols that would be wholly untenable in G8 countries. The purpose of this historical contextualization of HIV/AIDS policy currently in Ghana is to provide some explanation of why AIDS and related epidemics continue to be understood as primarily caused by socio-sexual dysfunction, which diminishes the range of feasible modes for public health policy (Stillwaggon, 2006). A final prefatory note: Nothing said in this paper endorses unprotected sex, or denies the 'reality of AIDS' nor diminishes the severity of known sexually transmitted diseases and their impact on women's health and fertility.

ROOTS OF BEHAVIOUR MODIFICATION CAMPAIGNS IN POPULATION POLICY AND RESEARCH

The tendency to regard African reproductive activity *in itself* as a threat to national health and development took centre stage in the 1960s during the escalation of Cold War politics. Global health resolutions and projects became the medium for politically neutral engagement with U.S. allies. The focus of these collaborations was population monitoring and control. A graphic parallel appears between the research conundrums defined in the population studies literature from roughly 1960 to the mid-1980s, on the one hand, and today's HIV/AIDS surveillance and prevention campaign literature from the mid-1980s to the present, on the other. Both traditions feature behavior modification of procreative women as a goal. Both document and then lament the gap between the knowledge that individual women disclose about effective contraception methods and its importance vs. what they actually do to curtail their reproductive behavior⁹. In fact, there was no break in this preoccupation with mass behavioral psychology among prominent statistical research teams working on African populations. John Caldwell, a demographer based in Canberra, Australia, remains widely influential in Ghana. In his work, and that of his trainees, can be found a seamless transition from the surveillance and data analysis of behavior causing fertility rates to surveillance and data analysis of behavior causing HIV infection rates.

⁸ As per the Millennium Development Goal number 8, authored by Jeffrey Sachs, UN Millennium Development Project. Concerning the coercive aspect of neo-liberal discipline in the global arena and its negative impact on the welfare of economically disadvantaged populations see A. Claire Cutler (1999).

⁹ S. Agyei-Mensah (2005: 22); R. Appiah (1986: 57); D.K. Bedele (1986: 87).

In the 1960s, Caldwell studied and subsequently supervised others to study the gap between knowledge and practice of effective methods of contraception¹⁰. Four decades later he was still training social scientists to study various aspects of the relation between exposure to mass education campaigns and actual behavior change—or indeed lack of actual behavior change as the case studies and demographics consistently proved to reveal¹¹. The fact that the gap persists is treated as the data to be explained. That this gap is pathological is taken as self-evident. Agyei-Mensah (2005) comments on this gap as the most compelling aspect of the failure in today's HIV prevention schemes. "After more than two decades of educational campaigns . . . the chief puzzle facing scholars ... is why knowledge and awareness of the epidemic is not translating into changes in sexual behavior [of young women]."¹²

A relevant question is: To what does this gap amount? Apparently neither Caldwell nor his students have considered exactly what knowledge content is attributable to an individual who responds correctly to a questionnaire administered under the auspices of a foreign donor responsible for providing antenatal or primary care clinical services where there are no options for health care. In light of the fact that AIDS etiology remains a confessed mystery confronting the experts who have been studying HIV for over 22 years, what should be counted as a knowledge claim about the sex risks of HIV attributable to a non-expert? The knowledge attributable to a respondent who provides the 'correct' answers to questions ostensibly concerning the HIV and sex is more likely to be providing a record of her awareness of the values and convictions prized by researchers conducting the questionnaire and by the funding agents that sponsor them. It should be expected that a well socialized informant in a post-colonial "frontier or boundary situation"¹³ will say the approved thing according to the knowledge tradition dominant in her formal education, while doing the contrary because it is approved by the primordial public wherein she conducts her important permanent relationships.

If someone persistently says one thing about her sexual behavior and then does another, then the way to understand this incongruity is not to hypothesize an inscrutable racially-based failure in rational coherence of the informant¹⁴. The incongruity requires searching for some implicit coherence between what she says and does from

¹⁰ J. Caldwell (1965, 1967, 1977, 1994). Data analysis collated for studies done in the 1970s are reassembled by Caldwell for theorizing about the unique and pre-logical African "social context of AIDS in sub-Saharan Africa" (1994: 138)

¹¹ J. Caldwell (1995, 1999)

¹² S. Agyei-Mensah (2005: 22)

¹³ This image was conjured by the Irish philosopher of language, Alisdair MacIntyre (1987: 388).

¹⁴ Caldwell (1994: 138) attributes to Africans a view of sexuality incommensurable with Judeo-Christian values, e.g. Africans' attitudes towards adultery reveals their "lack of guilt about sexual relations. . ." See also Stillwaggon who describes the genre's treatment of Africans as exotic, whose alien belief systems are isolated logically and culturally from Eurasian thinking (2006: 137-140).

her point of view. This typically entails attributing the relevant situation-specific background assumptions about the social context in which she is functioning both as a good informant, and as a good daughter, niece and wife. If someone's spoken responses persistently contradict her behavior then this should suggest that there are influential factors or considerations of which the investigator has been unaware heretofore. But the norm of investigation into social circumstances of HIV/AIDS is not to search for hidden variables that affect women operating as optimally rational agents in a globalized African society¹⁵. The norm set by the Victorians, and reified by Caldwell, is rather to suppose that continent-wide, incongruous response patterns reveal a perplexing moral incontinence or gender specific oppression peculiar to the plight of African women as a social genre. The practical simplifying and cost saving mechanism of deflecting attention from known causes of epidemics, focusing instead on blaming and educating the victim of contagion, began long before the 1960s, as we will review next.

EARLY HISTORICAL PRECEDENTS OF VOLUNTEERISM AND LIFESTYLE IMPROVEMENT AS STRATEGIES OF PREVENTION

Since the late 1800s, it became commonplace to blame illness upon the British and other foreign administrative officials themselves for becoming infected with malaria and other epidemics. In 1913, it was regarded (by the Principal Medical Officer Hopkins) as caused by their "indolence, recklessness, laxity and contempt for prophylactic methods."¹⁶ Thus, blaming the victim of illness has been present in official anti-malarial campaigns and mass education publications in colonial Gold Coast public health practice for a century. Notwithstanding, in the late 19th century, it was recognized that poor sanitation and septic dwellings were causing the spread of contagious diseases. These epidemics included yaws, tuberculosis and other upper respiratory illnesses, dysentery, mosquito-borne yellow fever as well as the infamous malaria. In 1883 and 1884, Ghana's first medical officers instituted bye-laws and regulations to ensure the construction of latrines and cemeteries, routine public cleaning, water sourcing and regular reporting of diseases. These rules were rarely enforced. The need for overall municipal works to improve housing infrastructure, water source protection, street and public space sanitation upkeep were well known¹⁷. Yet,

¹⁵ One such actual condition is the impact of famine on development of the woman's endocrine and immune systems while she was in utero.

¹⁶ Addae (1996: 49) recounts how Governor Clifford described the "scandalous laxity . . . and contempt for malarial prophylactic measures," of his European officers, urging that risky behaviour should attract a penalty discount in salary. Regulations to improve drainage, sanitation and environmental hygiene were put into effect but not enforced. Ghana was the only colony in West Africa whose urban centres had no drainage system as of 1870:

¹⁷ *Ibid.* p. 86. In 1900 it was known that yellow fever was spread by mosquitoes, and that infestation was exacerbated by the septic and congested living quarters that the majority of Gold Coasters lived in. Disease carrying agricultural pests, biting insects and worms that thrived under substandard living conditions and in polluted waters were under investigation in Kumasi and Accra over the last hundred years, as were industrial related illnesses generated in the mining sector. Cerebrospinal meningitis in the north was already under study in 1907 (1996: 181, 182). The etiology of major killers today, including tuberculosis, dysentery and malaria, were under scrutiny as major killers since the early 1900s. The need to clean streets and improve housing ventilation was known prevention strategies to subdue tuberculosis.

infrastructural development to protect against contagions in the urban centers remained conspicuously inadequate¹⁸. Instead, from the early 1900s education campaigns urged attitudinal change and conversion to what is now called 'positive living' in the discourse of HIV/AIDS treatment and prevention¹⁹. In the early 20th century, government distributed information through campaigns to teach nutrition, hygienic habits and precaution to protect against infectious diseases, as the keys to reducing incidence of malaria, yaws, guinea worm and infant deaths. A plague outbreak in 1908 prompted the authorities to revisit plans for sanitation reform. This inspired new administrative posts for the purpose of promoting urban sanitation by reducing housing congestion, organizing refuse disposal, building drains and sewage systems, lagoon management, mosquito control and nutritional protection of mothers and infants²⁰. But again, these plans were never brought to adequate fruition. Despite an active and celebrated track record in tropical medicine research, emphasis remained on public education rather than infrastructural development in the early part of the 20th century²¹. As of the early 1900s, the source and responsibility for growing death rates due to malaria were placed squarely in the moral domain of the individual blameworthy sufferer, while information about environmental hygiene and sanitation was disseminated through brigades to control mosquitoes and campaigns to control venereal diseases²². It remains so today.

Addae (1996) found that in 1917 infant deaths were documented in Ghana at a rate of nearly 1 in 3. Although sanitation was documented as appalling throughout the colony since 1870,²³ the cause of infant mortality was attributed to mothers' ignorance of modern hygienic practice. This is still the norm. In 2005, the National Malaria Campaign Programme issued an announcement to introduce a new prescription for malaria. Pregnant mothers' recalcitrance and indiscipline is portrayed as the reason for the fatalities following from chloroquine's ineffectiveness, even though it is widely recognized that drug resistance of the malarial parasite has rendered chloroquine ineffective, no matter how assiduously the dosage is taken. In two local free

¹⁸ *Ibid.* p. 113. Until 1877 no settlement in Ghana had streets, town plans or drainage except in the capital Cape Coast.

¹⁹ Addae (1996: 361). People were fatalistic about contracting yaws, and this attitude was blamed for contributing to its spread.

²⁰ Addae (1996: 118-119).

²¹ *Ibid.* pp. 146, 181, 182, 392. Medical research enjoyed well publicized breakthroughs beginning in 1899, so there was no shortage of understanding that a mental attitude is not sufficient to sustain an epidemic.

²² Addae (1996: 92, 86, 143, 146). Sexually transmitted disease education campaigns were organized in 1922 and 1923 by doctor and historian C. E. Reindorf. Health Days and Weeks were organized through schools.

²³ Through the 1870s and 1880s the Gold Coast was the only colony in West Africa without any drainage system. There were neither roads nor city plans laid except for the capital city Cape Coast until 1877. By 1910 sanitary reforms were launched in Accra, (Addae, 1996: 82, 126).

health education newsletters the announcement reads that “[a]ll pregnant women were expected to take two tablets of chloroquine each week from conception to birth. Most women found the tablets bitter and few adhered to the treatment with the result that nearly 9% of all deaths in pregnancy is due to malaria.”²⁴

Through house to house visits, volunteers in the 1930s stressed behavioral change by lecturing and counseling mothers on infant care and hygiene.²⁵ Native Authorities were urged to assume responsibility for building their own village dispensaries. Initially, the colonial government “suppl[ied] building materials, drugs, equipment, and trained personnel.”²⁶ Government’s decentralization of health care delivery through Medical Field Units anticipated widely celebrated community health centers that nowadays are called “functional service delivery points” in the jargon of HIV/AIDS Community Management training manuals.²⁷ Private/public partnerships to fight contagious diseases took off in the mining sector, where companies assumed the duty of securing their laborers’ protection against contagions through sanitation control. Working with government they reduced incidences of tuberculosis, other upper respiratory infections, hookworm, and silicosis.²⁸ By the 1920s, disease prevention was located among the responsibilities of individuals by improving their personal lifestyle habits. Public and social health policy was viewed as successful when it effectively motivated individuals to self care in the home and self-help in the community into the 1930s. As a corporate body, the state’s knowledge of contagious disease grew steadily through vigorous and prolific programmes of medical research. But the state’s practical implementation of such knowledge in order to fight epidemics effectively remained largely dormant.

²⁴ CARETalk newsletter, ed. D.E. Mensah *et al.*, December 2004, Vol. . No. 1 ISSN 0855711X. Also in *Nduru*, published by the Catholic Pharmaceutical Service April 2005 vol. 1. no. 3 ISSN 0855 5877. A subsequent issue of CARETalk (vol. 1 no. 2) no longer invoked mothers’ failure to adhere to a drug regime which was useless.

²⁵ In 1932, this initiative was institutionalized as the Gold Coast League for Maternal and Child Welfare.

²⁶ Addae (1996: 76). N. Kaleeba *et al.* (2000) Action AID literature. Management Health Services (2002) presents itself as introducing decentralization of health care, community participation, client-provider interaction, public information, CBO leadership training in Afghanistan, in Guinea, Haiti, Nicaragua, Senegal and South Africa. But in Ghana, MFUs and the Gold Coast League engaged in precursors of these initiatives 70 years ago.

²⁷ Management Sciences for Health (2002). Addae (1996) pp. 86-88, 169. The 1950s marked a brief heyday of expanding and enriching Medical Field Units in rural areas. MFRUs were developed in earnest from 1960 to 1966 when Nkrumah was deposed. MFUs successfully controlled epidemics for the first time in the country: yellow fever most famously, yaws, leprosy, smallpox, leprosy, malaria, onchocerciasis, trypanosomiasis.

²⁸ Addae (1996) pp. 156-167 observes that mining companies were frontrunners alongside missions in building hospitals and cooperative in applying state sanitary regulations while government was considerate of the mining companies’ profit margins in bearing responsibilities for sanitation in the residential areas of Obuasi and Tarkwa. In November of 2003, Kwaku Sekyi-Addo of the *BBC Worldservice* publicized Ashanti Goldfields supplying four condoms per month in pay envelope to all workers. The reporter went round gathering opinions of miners as facts about the HIV risk factors in that locality.

The knowledge versus practice 'gap' referred to in fertility research studies denotes the differential between exposure to prevention principles and women's practical application of those principles. This gap has been the main focus of researchers studying behavior of *individuals* in high risk groups in Ghana's post-independence period. But this research focus deflects theoretical and practical attention from what has been occurring at the *bureaucratic* level in the state's modern health institutions since the days of British military occupation.

SEGREGATION AS A KEY PREVENTION STRATEGY

In the HIV/AIDS research industry today, pregnant women and new mothers in Africa enjoy a nostalgic regard as the barometric window on the whole population's health. Pregnant women and new mothers, who regularly depend upon public antenatal clinics, constitute the sample for all the computer generated HIV estimates and projections produced and published in Geneva by WHO and UNAIDS for Africa *en masse* (Malan, 2003). This norm persists despite empirical evidence that pregnancy constitutes the most non-representative sampling criterion possible for any community of men, women and children in all age groups.²⁹ More awkward still, earlier generations of antibody test kits for HIV were non-specific and were known to sometimes yield a false positive result triggered by pregnancy alone (Johnson, 2003).³⁰

According to Sander Gilman (1985), throughout the 19th and early 20th centuries the chief concern of the medical establishment in Europe was to eliminate sexually transmitted disease through social control. With respect to the colonies, Gilman thinks this was a critical motive in social reform programmes, because "native" sexuality was understood to be primitive so it required monitoring, reformation and control. It was recorded as a fact throughout the 1800s, and as late as 1905, that syphilis was a

²⁹ Rian Milan (2003). The most common of earlier generations of HIV antibody tests (Western Blot and ELISA) registered pregnancy as a false positive result, among 70 other cross reactions. More recent test kits used in Ghana are quite specific by comparison and avoid the pitfalls of earlier models which were intended strictly for blood screening, not individual AIDS diagnosis. See R. Richards (2003).

The "limitation" of relying exclusively upon pregnant women of economic classes that frequent public clinics as the statistical sample for national populations is mentioned by the Ghana Health Service (2005) in its HIV Sentinel Survey 2004 Report, p. 38. Agyei-Mensah (2005) contrasts the self selected sampling of sentinel surveys with the costs and benefits of population demographic censuses which are more expensive and less frequently conducted, p. 14. See also Lauer §5 (2006).

³⁰ HIV antibody test accuracy fits only the type of population in the test sample. So in earlier generations the HIV antibody test kits were developed in the West and therefore yielded different results in Westerners and Africans. Test kit manufacturers 'verify' the specificity of their tests (specificity is a measure of how often false-positives will occur) by testing several thousand random blood donors (by definition at a low risk for aids or HIV infection), with 20 or 30 subjects thrown in who represent several of the more commonly recognized cross-reacting conditions such as rheumatoid arthritis or systemic lupus erythematosus. The other known cross-reacting factors more prevalent in Africa were not added to the equation (Johnson 2003).

type of leprosy that spread to Europe from Africa some time during the Middle Ages. Blackened skin was regarded as a symptom of this endemic form of leprosy.³¹

In a felt sense, contagious disease is pollution and contamination. Racial segregation was urged as early as 1893 and enforced strictly until the 1920s, when non-Caucasian military personnel in the British service confused the basis for the colonial government prohibiting the majority of people in appropriated territory from health services on the basis of skin color.³² Government spending and allocation of resources were reserved for centers calculated to be important enough, according to the principle that the degree of concentration of Europeans in residence determines a region's importance. The government was responsible for protecting Europeans' health exclusively.³³ Governor Griffith in 1889 decided to stop spending on public sanitation, reserving safe drinking water in metal tanks exclusively for European use.³⁴

A recurrence of this approach to urban renewal emerged in the Ghana Government's recent 2000 plan for the Modernization of Accra, steered by the Ministry of Tourism and Diasporan Relations. A central enclave in the city has been zoned off for special rehabilitation with streamlined world class commercial facilities to attract foreign investors, and gleaming antiseptic public toilets to suit Japanese visitors. Re-routing public transport is planned, and open markets will be relocated, so that the area will be effectively off limits for the average Ghanaian worker who rides tro-tro and buys live chickens.³⁵

The same rationalizations have been invoked over the last century to justify Government's failure to provide a more equitable urban development plan. The infamous brain drain and chronic medical personnel shortage still dogs Ghana health agencies since the mid-1930s.³⁶ As Addae notes, the high staff turnover and job instability

³¹ Gilman (1985: 257) discovered that the received explanation for the spread of syphilis and gonorrhea attributed these epidemics up through 1905 to the sexually deviant behavior of lower class European prostitutes, whose immorality was evidenced in drawings that highlighted their similarities in jaw, ear lobe, genitalia, body shape and color tone to African females, p. 245. Prestigious medical journals of the late 18th and 19th century detailed the observable physiological signs of African females' inferior character. As late as 1926, Freud alluded to "the dark continent" when characterizing contemporary ignorance of women's sexuality.

³² Addae (1996: 41, 46, 47).

³³ Addae (1996: 61).

³⁴ Addae (1996: 115, 117).

³⁵ As explained to a workshop of foreign diplomats addressed by Hon. Minister J. Obetsebi-Lamptey in Accra, June 2003.

³⁶ However Malawi, Gabon and the Cameroons, also poor countries, benefit from the work of medically trained Ghanaians, as does Botswana, because of the attractive remuneration and conditions of service. As pointed out by Prof. Richard Black, Director of the Centre for Migration at University of Sussex, at an International Workshop on Migration held at collaborating institution ISSER, August 1st-4th, 2005.

discouraged substantive programme development as early as 1931.³⁷ Beginning in the 1880s the initial response to epidemics by foreigners having seized power by force, was to safeguard themselves, specifically and exclusively by separating from those regarded in various respects as inherently threatening.³⁸ Racial segregation was the primary tool colonials used for preserving the health of those worth salvaging from the potentially fatal defilement of contagious disease, up until 1925 when it became unwieldy.

From the very beginning of Gold Coast hospital construction, the arrangement of medical services implemented the principle of preserving the pure from contamination by the impure. I have not read anything that suggests the mission hospitals did not also segregate by racial category, religious affiliation notwithstanding in this case. Nowadays, the same principle of securing salvation through segregation is regarded as central to the orthodox formula for solving the life and death crisis of HIV infection.³⁹ The subgroup worthy and deserving of salvage is supposed to be self-selected, in accordance with the Voluntary Testing and Counseling scheme currently encouraged by foreign experts and their local agents (Health Management Sciences, 2002).

COMMONLY SUPPRESSED BIO-MOLECULAR FEATURES OF HIV AND AIDS

The global media masks the fact that despite billions of dollars invested over 25 years in the study of AIDS in Africa, the actual cause of the syndrome remains an "unsolved jigsaw."⁴⁰ No one has come up with a fully satisfactory picture of the role played by viral material in the step-wise causal sequence of cellular events culminating in AIDS in the tropics. Nonetheless even the briefest consideration of available evidence makes clear that if there is a dysfunctional immunity characteristic of African societies today, it cannot be traced to any single ubiquitous cause. Nutritional status and overall health of the individual host, the pathogenic environment in a given geographical region, specifics of the genomic profile of the population in that region, and variations in the phenotypic expression of constantly changing strains of the viral material itself, are all key factors in determining who will contract AIDS,

³⁷ Addae (1996: 81).

³⁸ Addae (1996: 29).

³⁹ For details analysis of the Manichean duality, see Jan Mohamed (1985). Stephen Addae points out that the impact of chronic illness on productivity was promulgated in official government publications

⁴⁰ Those who do not reject the orthodox HIV-AIDS causal hypothesis nonetheless stress that the theory of how the virus functions to undermine helper T-cells, how it is transmitted, and how to eradicate it remain outstanding questions. In conversation with viral geneticist J.A.M. Brandful (2004) and Prof. A. B. Akosa, President of the Commonwealth Medical Association and Director-General of the Ghana Health Service in Accra. See also A. Hassig *et al.* (1998) quoting Paul Johnson of the Harvard Medical School: "The riddle of CD4 cell loss remains unresolved." Website posted version p. 3.

and how. The 'One Virus Fits All' doctrine is dangerously misleading. Experts who are involved with sequencing the HIV genome in Ghana and worldwide observe it as wild variant, with many sub-species evolving, and probably with different degrees of virulence, impacting on the human immune system in different populations at different speeds. Regionally specific strains of HIV may respond better to anti-retroviral drugs and vaccines.⁴¹ Yet, anti-retroviral drugs are imported to Ghana, as to other African countries, without establishing whether they will be useful or counterproductive in reducing the virulence of local strains of HIV.

The conflicted history between African and non-African knowledge traditions not only rationalizes a centralized, top-down management of HIV/AIDS research and product development from a distance. It also perpetuates a research-hostile environment in Ghana, despite the fact that nearly 80% of immigrant medical expertise employed in the UK and USA has been trained either in Ghana, Ethiopia, Nigeria or South Africa.⁴² Uncannily, it is still presumed that African research personnel and institutes are inadequate, lacking the skills and equipment for conducting cutting edge research and dissemination in viral genetics.⁴³

The front line of pursuit for a solution to AIDS is necessarily local, because of the variation and phenotypic specificity of the viral material presumed to be involved. At the cutting edge of top level viral genetic research in Ghana, the aim is to study active components of indigenous herbal remedies as they impact clinically upon phenotypically variant mutations of the HIV *in vivo*.⁴⁴

Important data is neglected by the orthodox HIV/AIDS discourse, which might help to correct popular misperceptions that failures in treating HIV/AIDS in Africa must be due to peculiarities of African sexual norms. Consider firstly a community-based

⁴¹ J.A.M. Brandful (2004) and in conversation. See Lauer (2006).

⁴² Akosa (2005).

⁴³ Through the local media expressing an advanced 'western' viewpoint, the public in Ghana has been explicitly mandated to regard with cautious suspicion potentially dangerous or useless quackery, in keeping with the worldwide directives to launch the '3 by 5' initiative (3 million people on ARV treatment by 2005). *HIV/AIDS in Ghana: Current Situations, Projections, Impacts, Interventions* (2004) Ghana AIDS Commission, 4th edition, September, p. 47. Extracted from WHO (2004) Report to the Technical Working Group on HIV/AIDS. Presented at the 2004 TWG Meeting, Accra. But in Ghana, where government support of scientific research has been at a low ebb for decades, there is cutting edge research experience and capacity to train technicians within a year or two to top grade competence at a well equipped laboratory, established with seed funding from the Japanese for the period 1986-2003. J.A.M. Brandful, Virology Department, NMIMR, in conversation, July 2005.

⁴⁴ "Herbal medicinal management of AIDS is one of the most recently launched research proposal under the auspices of Noguchi Memorial Institute of Medical Research in conjunction with Mampong Plant Medicine Institute, now in its final stages of development for ethical clearance and funding; as per discussion with principal investigator, viral geneticist J.A.M. Brandful, October 30, 2006.

study organized by a British medical team and published in 2001, involving 15, 127 subjects.⁴⁵ The results of two studies (United States in 1997 and Australia in 2001) demonstrated that for these populations there were very low rates of sexually transmitted infectivity.⁴⁶ Independent researchers reviewing both studies have concurred that these results demonstrate “there is no more heterosexual transmission of HIV in Africa than anywhere else, including UK, USA, Australia and Europe. So the explosive epidemic in Africa” cannot be explained by sexual transmission. Other studies corroborate this conclusion.⁴⁷

A second key consideration emerges from reflections upon the evolution of DNA in the human immunodeficiency virus (HIV) on several continents over the last twenty years, with special focus on its divergent permutations most recently in West and South Africa.⁴⁸ The genome shuffling of the virus in Ghana, as elsewhere, is completely at random, so the gene expression is unpredictable. The general outlook of this virus in different populations—i.e., whether it will transmit sexually, whether it will affect the immune system at all, and if it does, what response it will have to different sorts of anti-retroviral drugs—is completely idiosyncratic. For instance, the evolution of HIV in South Africa is approximately 92% due to HIV-1 subtype C—as a pure strain. In North America, the strain is predominantly HIV-1 subtype B. In Ghana, the virus has evolved from HIV-2 so that the HIV-1 recombinants dominate now, to between 80% and 90%, with only a few pure strains co-circulating. Some drugs effective in South Africa or in North America may prove sub-optimal in the management of AIDS cases due to HIV strains from Ghana. As the geneticist, Brandful (2005), emphasizes, “This is why local researchers should be keeping up a

⁴⁵ Gray, R. H. *et al.* (2001). “HIV transmission probability in Uganda comparable to USA: HIV infectivity cannot explain the explosive epidemic in Africa.” Presented to the *Eighth Conference on Retroviruses and Opportunistic Infections*, Chicago Illinois.

⁴⁶ Padian, N., Shiboski, S., Glass, S., & Vittinghoff, E. (1997). Heterosexual transmission of human immunodeficiency virus (HIV) in Northern California: Results from a ten year study.” *American Journal of Epidemiology*, 146, 350-357. For male-to-female transmission, the possibility of infection was “approximately 0.0009 per contact.” That is, an HIV-negative woman might convert to positive on average only after *one thousand* unprotected contacts with an HIV-positive man. Transmission to a man through vaginal fluids was 8 times less efficient; he might become positive on average only after *eight thousand* contacts with an HIV-positive female partner.

⁴⁷ Quoting from Johnston, R., Irwin, M., & Crowe, D. (2003). (Eds.) *H.E.A.L.'s Rebuttal to the NIAID/NIH report: The Evidence that HIV Causes AIDS, updated Nov. 29 2001*. <<http://www.niaid.nih.gov/factsheets/evidhiv.htm>>. Posted at <<http://www.virusmyth.net>> page last revised 7th March 2006. See also H. Lauer (2006).

⁴⁸ Conversations with viral geneticist Dr. J.A.M. Brandful (June 2005-July 2006) Virology Department, Noguchi Memorial Institute of Medical Research, University of Ghana, Legon. Brandful remarks: “For me, the most troubling misconception in the public mind is the belief that there is only one type of microbial entity called ‘HIV’. In Ghana, recombinant forms are now co-circulating with pure strains of HIV. Recombinants are unpredictable. There is no specific pattern to the combinatorial pairings of nucleic acids in the DNA molecule.”

constant surveillance of the HIV in Ghana. But little attention is being paid to the necessity for such research.”

Thus, the pathogen hypothetically regarded as *the* AIDS virus is not one virus but many. The media perpetuates the false assumption that HIV is one phenotype, which behaves identically over time and all geographical regions, infecting every population in precisely the same way, and capable of eradication by uniform intervention strategies applied worldwide.⁴⁹ This false assumption results in the misplaced emphasis on sexual behavior modification, condom distribution, and the urgency of making ubiquitously available invasive, toxic drugs to stamp out the virus.⁵¹ It is not just an oversimplification, but fatally detrimental to African health, to sustain the claim that one sexually transmitted virus can be singly responsible for causing immune deficiency uniformly worldwide.⁵²

A third fallacy generates from the mistaken belief that variations in HIV prevalence rates can be reliably traced, and that once traced, these rates are reliable indicators of variations in sexual behavior as an independent variable. Yet, HIV testing is notoriously unreliable. There are 76 known false positive results for HIV antibody tests.⁵³ But this testing is nonetheless the basis for Ghana's AIDS Commission's prevention strategic plan. Efforts to eradicate epidemics in Ghana, for obvious practical reasons, follow the plans set by global policy on HIV and AIDS in Ghana. But the orthodox experts, collaborating and publishing under the aegis of the most prestigious institutes and journals, are failing to reveal the extent of the problem and the multi-sectoral nature of the solution to chronic ill health in Africa.⁵⁴

⁴⁹ Big pharma's billion dollar investments in creating international AIDS conferences sustain the orthodox HIV/AIDS ideology and the urgency of anti-retrovirals as the singular solution to the HIV/AIDS crisis.

⁵⁰ According to a comprehensive cost-effectiveness survey published in *The Lancet* condom distribution is the cheapest of effective methods and therefore the preferred strategy for HIV prevention and control in poor countries.

⁵¹ Quoting from journalist Ato Amoaning-Annan, in his welcoming address as President of the League of HIV/AIDS Reporters in Ghana, delivered to the Media Sensitization Workshop in Accra (*op. cit.*) on November 18, 2005: "HIV/AIDS, as we all know, is not relenting [*sic*] in its evil mission of destroying humanity through its never-stopping rise and spread."

⁵² AIDS has been defined and diagnosed in Africa for at least a decade in accordance with the 1986 WHO conference in Bangui, Central African Republic when the operational definition was created for diagnosing AIDS in Africa without reference to any HIV test result. WHO and UNAIDS statistics and projections are based on this definition. See C. L. Geshekter (2004) and H. Lauer (2006). Many people with an HIV sero-positive test result never have and never will contract any of the symptoms of AIDS.

⁵³ C. Johnson (2003) and E. Papadopolus-Eleopulos et al. (1995)

⁵⁴ S. Agyei Mensah (2005: 22) "... decline in HIV prevalence is indicative of the intervention [behavioral modification] programmes in place."

Rather than promiscuity, one factor likely to contribute today to the breakdown of immunity in Ghana is famine. The women who are now 21 or 22 and constitute a heightened risk group for HIV infection just in the past year were born during or after Ghana experienced the worst of a period of food shortage back in 1983, during the peak of observed negative impacts from IMF experimentation on Africans. Three years later in 1986, HIV was first detected in Ghanaian blood. Famine is known to stunt growth. It delays development of the endocrine system *in utero*; and it is known that hormone function in the immune system's building a response to viruses like the common cold. Might severe food shortage shortly after birth or *in utero* manifest later in life as a rise in susceptibility to HIV infection now in evidence among young women in their peak procreative years?⁵⁵ This is an important question in the estimation of every public health official and medical researcher to whom I have presented it in Ghana. Yet, no international funding is available to pursue it. Funds continue to be devoted to teaching young women how to negotiate safe sex, how to use a condom, and why monogamy is preferable to polygamy for a long and healthy life.⁵⁶

There is a precedent for the lack of understanding or obstinate neglect, of the complexity concerning several co-dependent factors that cause the epidemics plaguing Ghana today. Geographer Jacob Songsore pointed to the same lack of attention to co-factors in discussions from the 1970s concerning population growth in relation to

⁵⁵ Kofi Annan publicized at the UN General Assembly a worrying increase in the prevalence of infection among African women now in their twenties. In particular, a definite causal relation between famine in Ghana in 1983 and children's growth rates has been widely and firmly established by Prof. Richard Biritwum, Vice Dean of Korle Bu Teaching Hospital in Accra. He demonstrates steadily over the last twenty years that children in Goma Fetteh born during or immediately after the famine in 1983 were not only deprived of average healthy birth weights as you'd expect, but subsequently their puberty was retarded as well, especially the girls, who reached their menses later in life than their counterparts borne before and well after the famine period. Famine *in utero* affects the endocrine system's functioning in later development, and hormone deficiencies are observed to affect immune system functioning. For instance changes in estrogen level render women who are approaching menopause periodically highly susceptible to viral infections like influenza.

⁵⁶ B. Duda, *et al* (2005: 22), at Harvard School of Public Health's Department of Population and International Health in collaboration with Korle Bu Teaching Hospital's Dept of Ob/Gyn, and Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Legon. The team drew the conclusion in 2005 from a "community based study [in Accra]" is that the results "confirm the need to target young, sexually active women [with] a strong public health initiative . . ." Strangely, the strong public health initiative advocated here is not to target young women when they are highly susceptible to HIV infection with vitamin supplementation and training in nutritional food crop productivity. The initiative is rather supposed "to increase awareness of the risks and the link to STIs . . . to prevent the further increase in HIV prevalence and the resultant HIV-associated illnesses."

The researchers claim this even with evidence that the HIV prevalence does not correlate positively with syphilis as expected, and that it does not correlate positively with number of sexual partners. The lack of statistical correlation is attributed to the likelihood that the women are lying about their STIs and the number of sexual partners (p. 63 abstract and p.65).

environmental disintegration and poverty in Northern Ghana.⁵⁷ In response to the boom in population surveillance and control that surged in the 1960s and 1970s, Songsore argued that population growth does not act in isolation but is co-dependent with other factors including economic neglect of the northern regions of Ghana, escalating poverty, and mounting rural densities in isolated pockets of otherwise underpopulated areas, to cause environmental degradation in northern Ghana. Likewise, facts about the variation of the genome of HIV suggest that procreative or commercial sex *in isolation* does not cause AIDS nor does it otherwise contribute *in isolation* to the general increase in Ghana's burden of chronic diseases since the 1980s.

HOW EPIDEMIC PREVENTION SHOULD LOOK

As a Director-General of the Ghana Health Service has been stating for years, it is clear that lifting the disease burden requires a multi-sectoral⁵⁸ and socio-economic solution. Focus on correcting moral laxity, ignorance, peer pressure, traditionalist prejudices, or gender-specific oppression of sexually active young African women all deflect from the proximate causal factors that distinguish the health profile of the majority of Africans from economically advantaged populations in G8 countries. In 2005, the Ghana Health Service reviewed a concept paper for a proposal to marshal the cooperation of other government ministries, agencies and departments, as well as local private corporations for commercial advertising sponsorship in order to utilize prime time of the local radio and TV networks for staging a nationwide campaign about environmental sanitation and personal hygiene. The plan cost equivalent to €160,000. Job-place hand-washing campaigns are planned, with school clean up competitions offering cash prize incentives, proper management of livestock around living quarters are scheduled. Priorities focus on fumigation of disease carrying rodents, and training an intolerance of flies and mosquitoes. Marketplace renovators are contracted to raise cement structures. Local farmers are offered alternatives to the infectious practice of using gutter water and so-called night compost to grow commercial vegetable crops, a common means of transmitting our chronic typhoid, cholera, diarrheal infections, parasitic and intestinal worms. Plastics and other refuse recycling industries are encouraged in the concept paper as income generating activities. Personal tips for controlling foot rot, body odor, and for promotion of oral hygiene were stressed in the concept paper. In the then Director-General's seven page concept paper describing the project, sex is never mentioned once.

⁵⁷ Songsore (2004: 242-243, 257) points out that G-8 countries constitute 23% of the world population but impose the bulk of environmental insult and pollution through resource consumption and industrial waste discharge. Universals do not apply to analysis of population impact: given the historical divergence in land distribution patterns, population growth in Kenya is entirely distinct from the scenario in Northern Ghana.

⁵⁸ A.B. Akosa, in conversation July 2005.

REFERENCES

- Addae, S. (1996). Evolution of Modern Medicine in a Developing Country Ghana 1880-1960. Edinburgh, UK: Durham.
- Agyei-Mensah, S. (2005). HIV/AIDS epidemic in Sub Saharan Africa: Homogeneity or Heterogeneity? Norwegian Journal of Geography, 59: 14-15.
- Akosa, A.B. (2006, February). 'Scentino': Campaign on Personal Hygiene and Environmental Sanitation. April 26–May 16. Concept Paper. Accra: Ghana Health Service, typescript(Unpublished).
- Allotey, C. *et al.* (2005, April). Nduro 1, (3). Catholic Pharmaceutical Services.
- Anarfi, J. K. (2001). Migration and Livelihoods in the Era of AIDS: A West African Focus with emphasis on Ghana. Institute of African Studies Research Review, (17-24).
- Anarfi, J. K.. (2004). To Change or Not to Change: Obstacles and Resistance to Sexual Behavioral Change among the Youth in Ghana in the Era of AIDS. Institute of African Studies Research Review, 19, (1): 27-45.
- Brandful, J. A. M. (2003). A simplified view of human immunodeficiency virus and its manifestation in Ghana. Unpublished manuscript. Legon: Noguchi Memorial Institute for Medical Research, Ghana.
- Brandful, J. A. M. *et al.* (1997). Predominance of HIV type-1 among AIDS and AIDS Related Complex Patients in Ghana, West Africa. East African Medical Journal, 74 (17-20).
- Brandful, J. A. M., Apegyei, S.A. & Ampofo, W.K., *et al.* (1999). The Relationship Between Immunoclinical Status and Prevalence of Viral Sexually Transmitted Diseases Among HIV-1 Seropositive Patients in Ghana. Journal of Viral Immunology, 12, (2): 131-137.
- Caldwell, J. C. (1965). Extended Family Obligations and Education: A Study of an aspect of demographic transition among Ghana University students. Population Studies, 19, (2): 183-199.
- Caldwell, J. C. (1967). Fertility Differentials as Evidence of Incipient Fertility Decline in a Developing Country, Population Studies, 21, (1).
- Caldwell, J. C. (1977). Population Growth and Family Change in Africa: the new urban elite in Ghana. London: C. Hurst & Co.

- Caldwell, John C. (ed.) (1977). The persistence of high fertility: Population prospects in the Third World. Canberra: Dept. of Demography, Australian National University.
- Caldwell, J. C., Caldwell P. & Quiggin, P. (1994). The social context of AIDS in sub-Saharan Africa. In
- Orubuloye, I.O., Caldwell, J.C., Caldwell, P. & Santow, G. (eds.). Sexual Networking and AIDS in Sub-Saharan Africa: Behavioral Resistance and the Social Context (129-161). Canberra: Australian National University.
- Caldwell, John C. (1995). Understanding the AIDS epidemic and reacting sensibly to it. Social Science and Medicine, 41, (3): 299-302.
- Caldwell, John C. *et al.* (eds.) (1999). Resistances to Behavioural Change to Reduce HIV/AIDS Infection in Predominantly Heterosexual Epidemics in Third World Countries. Canberra: National Centre for Epidemiology and Population Health, Australian National University.
- Codjoe, S. N. A. (2002). "Cohort Analysis of Fertility Change among Females in Two Agro-ecological Zones of Ghana." Institute of African Studies Research Review, 20, (2): 11-21.
- Cutler, A. C. (1999). "Locating 'Authority' in the Global Political Economy." International Studies Quarterly, 43, (1): 59-81.
- Duda, R. *et al.* (2005). "HIV Prevalence and Risk Factors in Women of Accra, Ghana: Results from the Women's Health Study of Accra." American Journal of Tropical Medicine and Hygiene, 73, (1): 63-66.
- Geshekter, C. L., Mhlongo, D.M., & Köhnlein, C. (2004). AIDS, Medicine and Public Health: The Scientific Value of Thabo Mbeki's Critique of AIDS Orthodoxy. Presented at the 47th Annual Meeting of the African Studies Association, November 11, New Orleans, Louisiana (unpublished).
- Ghana Government. (1969). Population Planning for National Progress and Prosperity. Accra, Ghana: Ghana Publishing Corporation.
- Hässig, A., Kremer, H., Lanka, S., Liang, W-X. & Stampfli, K. (1998, May). 15 Years of AIDS. Continuum 5, (3): 32-37.
- Helfenbein, S. & Severo, C. (2004). "Scaling up HIV/AIDS programs: A Manual for Multisectoral Planning." Management Sciences for Health. Boston.

JanMohamed, A. (1985). "The Economy of Manichean Allegory: The Function of Racial Difference in Colonialist Literature." In H. L. Gates Jr. (ed.) "Race", Writing, and Difference (78-106). Chicago: University of Chicago Press.

Johnson, C. (2003). "Why the 'AIDS test' doesn't work in Africa." Rethinking AIDS 9, (1): 1-4. Kaleeba, N., Kadowe, J. N., Kalinaki, D., & Williams, G. (2000, July). "Open Secret: People Facing Up to HIV and AIDS in Uganda." Strategies for Hope Series, 15. London: ACTIONAID.

Lauer, H. (2006). "Cashing in on shame: How the 'Tradition vs. Modernity' dualism contributes to the 'HIV/AIDS crisis' in Africa." Review of Radical Political Economics, 86, (1): 90-139.

MacIntyre, A. (1987). "Relativism, Power, and Philosophy." In K. Baynes *et al.* (eds.). After Philosophy: End or Transformation? (385-411). Massachusetts: MIT Press.

Malan, R. (2003, December). "Africa Isn't Dying of AIDS." The Spectator. London. Online wysiwyg://36/http://www.spectator.co.uk=backissue=2003-12-27&id.

Mensah, D.E. *et al.* (2004, December & 2005, January) CARETalk Newsletter 1, (1 & 2). Accra. ISSN 0855 711.

National AIDS/STI Control Programme (2004, September). HIV/AIDS in Ghana: Current Situation, Predictions, Impacts, Interventions. Accra: Ghana Health Service. HIV Sentinel Survey 2004 Report (2005, January). Accra: Ghana Health Service.

Neequaye, A. R., *et al.* (1987, September). A report on HIV Infection in Ghana up to December 1986. Sexual habits and social factors in local Ghanaian prostitutes which could affect the spread of HIV. Ghana Medical Journal, 21, (1): 7-15.

Padian, N., Shiboski, S., Glass, S., & Vitlinghoff, E. (1997). "Heterosexual transmission of human immunodeficiency virus (HIV) in Northern California: Results from a ten year study." American Journal of Epidemiology, 146, (350-357).

Papadopoulos-Eleopoulos, E. (1995). "AIDS in Africa: Distinguishing fact and fiction." World Journal of Microbiology and Biotechnology, 11: 135-143.

Population Impact Project (1986, April). Vol. II Contributed Papers. [Hereafter: PIP] Proceedings of the National Conference on Population and National Reconstruction. Legon: University of Ghana.

Richards, R. (2001, October). "Why the HIV Tests Can't Tell You Whether You Have HIV." Zenger's News Magazine. Interview by M. G. Conlan. Reprinted June 7, 2002 (20). Online <mgconlan@earthlink.net> and <<http://www.virusmyth.net>>

Songsore, J. (2004). Regional Development: The Theory and the Reality. Accra: Woeli Publishing.

Stillwaggon, E. (2006). AIDS and the Ecology of Poverty. New York: Oxford University Press.