

# **Factors Affecting the HIV-Epidemic and its Differences in Sub-Saharan Africa - A Summary with Some Methodological Reflections**

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## INTRODUCTION

Many assumptions have been proposed to explain why AIDS has swept across sub-Saharan Africa on an extraordinary scale. In comparison to the United States and Europe, where the epidemic first emerged among the homosexuals and intravenous drug users, in sub-Saharan Africa the HIV infection has been more equally common among males and females. This article concentrates on summarising possible factors which have made the epidemic exceptionally widespread in some regions. For instance, in East-Africa the regions of Rakai in Uganda and Kagera in Tanzania several surveys have found prevalences of 50-60% among the sexually active population (Prolongeau 1995; Auvert 1994). On the other hand, the epidemiological picture in West Africa is much more heterogeneous. The reasons for the differential spread of HI-viruses are not fully understood, but most likely they result from an interplay of biological, social and cultural determinants. The HIV epidemic is a challenge to multidisciplinary. Nevertheless, specialisation on the domains of medicine, anthropology and demography leaves little space to realise the effect and importance of zooming the focus in the HIV epidemic: from microbes to a community and from a community to a population.

## 1. ESTIMATING THE SPREAD OF HIV

Estimations on the spread of HIV in Africa are unreliable owing to a number of reasons. To begin with, the epidemiological follow-up is mostly based on indirect methods. In general this means that the HIV prevalences are estimated on the basis of reported cases and surveys. Second, there is normally at least a one year's delay in reporting the incidence to WHO. Furthermore, tests are not always available at dispensaries, and since symptoms of AIDS resemble other common diseases, all cases may not be diagnosed correctly. Besides, collecting statistic data and reporting it is not the priority function of primary health care. The crisis of health care caused by AIDS in Africa actually weakens the resources to follow its evolution in numerical terms. However, the risk of false negatives has been reduced

since the reliability of the current tests is relatively good. The sensibility of the currently most common test, ELISA-test (Enzyme-linked immunosorbent assay) of the second generation is 95%. In Africa most AIDS-patients die elsewhere than at hospitals or dispensaries. Consequently, the so-called verbal investigations on the cause of death are used as a method, but the data is unreliable since survivors may deliberately conceal that the passing away was due to AIDS. On the other hand, in regions where the prevalence is high the stigmatising effect of AIDS has declined and verbal surveys may bring more accurate data.

## 1.2 VARIATIONS OF THE EPIDEMIC

Despite the difficulties of acquiring reliable information on sexual behaviour, several studies have come to the conclusion that the evidence of heterosexual transmission is convincing (e.g. Mnyika-Klepp 1995). In contrast, in the West the number of infected men may be even five to ten times greater than the number of women. The principal causes are the frequency of homosexual transmission and intravenous drug use. However, as the epidemic has spread to a larger population, women have become increasingly likely to contract HIV from heterosexual intercourse. This in turn suggests that a balanced distribution of sex would only demonstrate a longer exposure to HIV on the African continent. The disease would have reached an endemic stage and the dynamic of the HIV epidemic would follow the same evolution in any population.

Nevertheless, it is questionable whether the impact of the duration of the exposure to HIV would be adequate to explain the differential spread of HIV in sub-Saharan Africa since there exists considerable variation between cities where the epidemic had started around same time. For example, in Kigali and Kinshasa, two central African metropolises in which the first AIDS cases were reported around 1983 (Piot, Taelman et al. 1984; van de Perre 1984). Nonetheless, in Kigali the epidemic has been much more severe, whereas in Kinshasa the incidence of HIV1 has stabilised (Auvert 1994: 84). These differences, that somewhat curiously do not always coincide with factors such as political stability, are more significant in West-Africa. In Abidjan (Ivory Coast), 10-13% of pregnant women tested positive in 1992, and in the same year in Yaounde (Cameroon) the respective figure was only 2,1% (Deniaud 1995: 90; Auvert 1994: 79).

Of course, surveys never can offer a fully representative picture, but great differences do demonstrate significant differences in trends. On the other hand, the different qualities of virus-types HIV1 and HIV2, which is the dominant type in West-Africa, is a factor that causes some methodological differences in comparing prevalences. Equally, HIV-prevalences may conceal a great socio-economical diversity in the population. In terms of public health, the significance of an HIV prevalence has to be evaluated in relation to the quantity and quality of the population concerned. Rural and urban environments require different

measuring-sticks in terms of severity. Auvert (1994) gives an example: supposing that 80% of the population would live in rural areas, a prevalence of 5% in a rural area would be more alarming than a prevalence of 10% in an urban zone. In the previous case 4% of the total population would carry the infection, and the respective share of urban areas would be only 2%.

### 1.3 LIMITING THE POSSIBLE EXPLANATIONS

As a result of abundant campaigning by posters, radio-programs and health workers, the current spread of HIV is scarcely any longer attributable to ignorance. Rather, the discrepancy between the amount of information available and the actual spread of HIV suggests that the logic of AIDS prevention in terms of public health and the logic of the risk behaviour is very different. The situation is becoming common also in the West, where AIDS is increasingly becoming a disease of the marginalised; the message from the official system does not meet those who are already deprived. Hence, it could be theorised that the common conception of 'risk behaviour' and the conceptions of one's personal risk management are situated different categories (Sachs 1989).

Anyhow, a number of typical factors which are known to facilitate the transmission of HIV in the West are practically ruled out in most of the Africa. Homosexual transmission routes have not been reported; at least there exist no homosexual communities or sub-cultures comparable to the West. Intravenous drugs are seldom used. Consequently, the use of shared needles is not a factor of a comparative magnitude as in the Western societies. Still, as claimed by Dozon (1994), injections are highly appreciated in comparison to pills. Medicines that are taken orally do not have the seemingly direct contact with the blood and that one needs to take several times.

### 1.4 PROBLEM: HOW COULD IT SPREAD SO FAST?

Given that in Africa the most common mode of transmission of HIV is heterosexual intercourse, the rapid progress of HIV in some areas raises questions as the risk of acquiring the HIV during heterosexual intercourse is actually astonishingly low. It has been calculated that in a single act of unprotected vaginal intercourse the change of transmission from the man to the woman is one in 300 and from the woman to the man, possibly as low as one in 1000 (Caldwell and Caldwell 1996). Of course, from the point of view of AIDS-education the justification of this theoretical calculation is questionable. Furthermore, once transmitted, the effect is a 100% misfortune in an individual life. Anyhow, the fact that at least most types of HIV viruses are not very easily transmissible suggests that there must be a range of other HIV-susceptible factors that are unique in African conditions.

## 2. POSSIBLE CONTRIBUTING FACTORS FOR THE DIFFERENTIAL SPREAD

### 2.1 SEXUALLY TRANSMITTED DISEASES

There is evidence that other sexually transmitted diseases (STD:s) act as a biological cofactor for HIV transmission (e.g. Laga, Diallo et al. 1994). The hypothesis has been proposed and supported by a correlation between the proportions of HIV infections and co-existing high prevalences of other sexually transmitted diseases (STD:s). Among these especially ulcerative diseases, like chancroid, most likely enhance the transmission of HIV. Nevertheless, there have been difficulties in interpreting this sort of data which is observational: on the other hand, it is evident that persons who are at risk of contracting STD:s are also at risk of contracting HIV. Recently, however, it has been proved that remarkable reduction of HIV incidence can be achieved by paying special attention to curing and preventing other STD:s. In 1995, Grosskurth et al. realised the first randomised trial in the Mwanza region, Tanzania, to demonstrate the effects of a preventive intervention on HIV incidence in a general population (12,537 individuals were recruited). With intervention of improving the treatment of STD:s the study demonstrated an overall 42% reduction of HIV incidence.

### 2.2 TRANSFUSIONS AND SHARING RITUAL INSTRUMENTS

In the beginning of the HIV epidemic it was widely suspected that the African AIDS-epidemic would be due to 'cultural practices'. Later on, as no remarkable or specific evidence was found there has been much less attention towards these factors, that form an incoherent group.

It is known that especially in central African countries blood transfusions have been widely practised in the absence of other treatments for treating anaemia among women during or after pregnancies and among children. According to official samples, the transmission through blood transfusions could explain overall only 5%-10% of adult cases, but perhaps as much as 25% of the infections among children (Dozon 1994). Equally, the use of uninfected instruments in medical occasions such as deliveries, or ritual settings (circumcision, scarification, excision) is a risk factor the extent of which is hard to estimate. Scarification is probably the most common of the traditional practices in which shared instruments are used. It is practised among many different ethnic groups all thorough sub Saharan Africa at different ages, childhood and puberty being especially important. Nonetheless, the relative rarity of HIV-transmission in children between 5-15 years suggests that scarification is not a significant factor in the transmission (Hrды 1988).

## 2.3 LACK OF CIRCUMCISION AND INFIBULATION

Male circumcision is common in sub-Saharan Africa but still there are many ethnic groups who do not have the custom. By comparing the areal distribution of the ethnic groups among which males are uncircumcised with areas of high seropositivity, some studies (e.g. Cameron et al. 1989; Bongaarts et al. 1989; Caldwell and Caldwell 1996) have suggested that lack of circumcision could be a risk-factor for HIV transmission in Africa. The areas of highest rates of HIV1 in Africa are situated along the so-called "AIDS -belt", which is an elongated area covering areas of Kenya, Tanzania, Uganda, Rwanda, Burundi, Zambia, Zimbabwe and Malawi. Curiously, relatively many ethnic groups who do not circumcise their males inhabit the same areas.

The medical assumptions are that the foreskin could physically trap infected vaginal secretions or that simultaneous other infection increases the presence of HIV-infected cells in the genitals. It is already known that certain STD:s, particularly chancroid, tend to occur more frequently among uncircumcised men in poor areas where maintaining personal hygiene is difficult. Despite the apparent geographical correlation it remains unknown whether the lack of circumcision itself makes men more susceptible to HIV infection or whether being uncircumcised first promotes the risk of chancroid infection, which in turn would catalyse the transmission of HIV.

Female circumcision or infibulation is likely to have a reverse effect. It has been postulated that female infibulation increases the risk of HIV transmission by creating a scar tissue in the mucosa which is susceptible to tears during intercourse. Like in the case of STD:s, lesions make the mucosa permeable for the transmission of HIV by facilitating a direct contact with blood. Nonetheless, unlike in the case of male circumcision, clear correspondence with areas of highest HIV-prevalences is not found despite some overlapping. Infibulation is mostly practised in West Africa, Ethiopia, Somalia, Sudan, the North of Kenya. On the other hand, infibulation is also the custom of many and considerably large ethnic groups in East-Africa. Yet the data on the diffusion of infibulation is uncertain, and besides governments are increasingly inclining to ban its practise. Consequently, the knowledge of the effect of infibulation on the HIV-epidemic is much less complete (Hrdy 1988).

However, the implications of factors such as circumcision and infibulation in the HIV epidemic are complicated as their traditional justifications have not relied on medical grounds. On the other hand, many cultural practices do possess a rational function in relation to the environment, but the extent to which culture is regarded as an adaptive strategy is a matter discussed between different anthropological schools. Nevertheless, in relation to the spread of HIV it would be erroneous to treat circumcision or infibulation as biological determinants alone. As ritual customs they carry a symbolical meaning that stems from cultural values which in

turn affects sexual behaviour. Consequently, the impact of circumcision of infibulation in the susceptibility to the HIV infection will only make sense in relation to sexual networking and practices. An alternative, or at least an intervening explanation is that the correlations between areas of high prevalence, lack of male circumcision or practise of infibulation would reflect differences in sexual activities.

## 2.4 POSTPARTUM ABSTINENCE

Despite considerable regional variation, postpartum abstinence (the period during which men have no sexual access to their wives who have delivered) has been a universal practise in Africa. Usually other customs, like living in separate huts or mother's moving to her native village have contributed to the maintenance of post-partum taboos. In contrast to the Western conception of family planning as a means of achieving smaller family sizes, post partum abstinence with its resulting birth spacing has also promoted the probability of each child to survive. The custom has been common in polygynious societies among which the husband could have had sexual access to other wives during the taboo period of the wife who had delivered. Traditionally the periods of sexual abstinence have been much longer (even more than two years), but anthropological literature has witnessed a trend of reduction in terms of length in all over the sub-Saharan Africa, especially during the last decades. Similarly, the proportion of polygynious marriages has reduced.

Caldwell and Caldwell (1996), regard post-partum abstinence as an institutional risk factor of AIDS in sub-Saharan Africa because during these periods husbands can only resort to extramarital, and hence, risky sex. The assumption, in other words, is that post-partum abstinence increases the diffusion of sexual relations. Nevertheless, the custom still also has its preventing effects in terms of conception. Even if the institution would increase the overall sexual mixing as in the Caldwell's assumption, the sexual abstinence at least provides an HIV-risk-free period for the mother and the baby. It is noteworthy, that women who initially have delivered without the HIV infection may convert HIV positive during the lactation period. The probabilities of transmission through breast feeding are slight but nonetheless well documented in several studies (e.g. Sherr 1993).

## 2.5 COMMERCIAL SEX AND PATTERNS OF SEXUAL MIXING

The HIV epidemic in sub-Saharan Africa has contributed to an increase in studies on sexual networking, an area that has been poorly studied because of its sensitivity and methodological difficulties. Nonetheless, surveys that have been realised this far suggest that there are grate variations in different types of sexual relations and their diffusion in different regions of Africa (Oruluboye, Caldwell et al. 1992).

The considerable variations in the frequency of contacts, as well as the different proportions of men and women involved in them is most likely an influential factor to the differential spread of HIV. Studies on sexual networking include many variables such as the number of partners, nature of sexual contacts (stable or casual) and the different proportions of men and women engaged in these relationships. In other words, the total number of partners per person is not alone significant. The data on how these relations are dispersed in a community is equally important.

Anderson et al. (1991) differentiate two patterns of non marital or extra marital sexual activity in a society. These models have different implications to the HIV epidemic: in Community A population the pattern of male sexual activity is diffused in a large number of women. In Community B much of male sexual activities is focused on a relatively small number of women (in practise commercial sex workers) who have large clienteles. In practise, in the B model the high prevalence of concurrent partners among the commercial sex workers may lead to a rapid spread of HIV infection. On the other hand, with the effect of time the epidemic may ultimately reach higher levels in the community A than in the community B model. However, these patterns of sexual activity show considerable variance and they are affected by factors such as migration (Oruluboye, Caldwell et al. 1992).

Studies on prostitution will never provide exact data since prostitution in its essence is a clandestine affair. Furthermore, the word 'prostitution' with its western connotations is not the correct one to depict the variety of extramarital relations in which the economic component is decisive. Consequently, comparing the studies on commercial sex in different parts of Africa is difficult. Nonetheless, the role and pattern of prostitution in a society is one of the major determinants in the HIV epidemic. In the community B model the relatively small proportion of women who have many clients is more likely to become infected than in the community A model in which the relations per woman are fewer and more stable. For instance, apparently sexual worker in Nairobi have a higher incidence of HIV infection and a larger number of clients than prostitutes in Kinshasa (Laga and Alary et al. 1994; Willerford et al. 1993). Furthermore, the studies of Songué (1986; 1993) emphasize the expansion of temporary and part-time prostitution in contemporary Yaounde. In Songué's study the part time prostitution was characterised as an activity to earn extra-income in order to achieve an urban life style of consumption, not primarily as a means for survival. Accordingly, the rates of seroprevalence have been much lower: a survey among commercial sex workers in 1992 gave 25% in Yaounde and 45% in Douala (Beat-Songué 1993). These findings coincide to the general findings; it was widely assumed that the HIV epidemic would spread with an equal intensity to Nigeria and West Africa in general, but this has not happened, with the exception of Ivory Coast, parts of Ghana and Senegal (Oruluboye, Caldwell et al. 1994).

## 2.6 DISPERSION OF AGE DIFFERENCES BETWEEN THE PARTNERS

Brouard (1994) stresses the importance of factors relating to the functioning of age cohorts and sexual mixing in the HIV epidemic in sub-Saharan Africa. The background situation, according to Brouard, was the traditional polygynious family structure together with the relatively slow population growth. The maintenance of polygyny was made possible by an age difference of ten years or more between the cohorts of husbands and that of wives. Hence the mortality among males resulting from the age difference could thus reduce their number. Furthermore, the widowed women were almost systematically remarried into polygynious families. All in all, polygynious structures together with the reduced mortality and population growth have lead into a current pattern in which sexual activities take place within an exceptionally large variation of age differences between partners. According to Brouard (1994) the result is the prevailing pattern found in most of sub Saharan Africa in which the new sexually inexperienced age cohorts have sex with much older partners. The latter have had a long history of active sexual life and hence a greater exposure to HIV.

Analogically, Brouard (1994) suggests that spread of the HIV epidemic could be limited by reducing the dispersion of age between partners. This, of course, is a theoretical assumption: if everyone was to have sexual partners only with one's own age mates, the HIV epidemic would extinct on its own simply by the effect of ageing ('age-cohort endogamy'). A time passes, every year the age cohorts of possible HIV carriers would get older and older. Conversely, new age cohorts would not become contaminated. Nevertheless, Brouard (1994) warns not to confuse two concepts: the age difference between spouses and the dispersion of age differences between the partners. It is noteworthy that a great age difference between spouses would not be an accelerating factor if it was strictly equal among all the couples. The effect would be the same as in the age-cohort endogamy. Instead, the current pattern of sexual mixing in which each cohort of men disperses its relations into several cohorts of women is extremely HIV -susceptible and thus likely to generate explosive epidemics. As an example, the great dispersion of age differences between partners was, according to Brouard, one of the main originators of the exceptionally severe HIV-epidemics among homosexual communities in the West.

## 2.7 VERTICAL TRANSMISSION

The risk of vertical transmission varies between 15%-30% depending on the population studied. The foetus may become infected during the pregnancy, in the course of the delivery or after the delivery via breast-feeding. A child born from a HIV positive mother always carries HIV antibodies and consequently, the real serostatus of an infant can only be determined after 12-15 months of delivery. It is



not exactly known at which stage of the pregnancy the HIV-transmission takes place. On the other hand, the HIV-infection does not have an effect on a woman's fertility or in the course of pregnancy. The proportions of children born with the infection are high in countries that have high fertility rates, and some estimations include the children in the overall HIV prevalences. In terms of estimating the evolution of the epidemic it is important to make a distinction between adult and infant prevalences as children who have had vertical transmission will die before reproductive age. Equally, the possibility that children could infect each other is almost non-existent (Avert 1994; Preble 1995).

### 2.7.1 QUESTIONS SURROUNDING HIV AND REPRODUCTION

In Africa a lot of HIV testing takes place in antenatal clinics. Testing usually adheres to voluntary participation and refusal rates are low. However, some studies have indicated that women may allow the testing but avoid further appointments because they feel unable to cope with a HIV positive result (e.g. Sherr 1993; Temmerman et al. 1995). The overriding principle of medical testing should always be the benefit of the recipient. There should therefore be no rush to screen pregnant women and to tell them the results without careful pondering of the possible consequences, such as violence, divorce or suicide.

The underlying assumption in studies concerning pregnancies is that reproduction is a domain attributed to women only. This implies that women would have the decision power on their fertility, which very often is not the case. On the other hand, the experience in the West has proved that there is little to take for granted as the relation of HIV and reproduction is a very complicated one. Specialists usually equate HIV with a termination or avoidance of pregnancy. Nevertheless, there actually is no evidence that HIV positive women would choose those options more often than women who are HIV negative. A comparative review by Sherr (1993) on studies concerning abortion and HIV-positive pregnancies in New York, Edinburgh, Baltimore, Paris, Geneva and finally, Nairobi showed no significant difference in termination rates. Apparently woman's serostatus does not affect termination decisions as much as factors such as how much a baby was wanted in the first place. In addition, subsequent pregnancies after the abortion, have been reported. Reasons for this phenomenon must be various and culturally determined. Yet Sherr (1993) makes a general suggestion that as HIV infection represents death and meaninglessness and as pregnancy is usually validated by the society, the desire of an uninfected baby may be considered worth of the HIV risk. Anyway, in developing countries the whole schema of decision making in reproduction is different. Nevertheless, the psychological and social dilemmas in pregnancy and HIV-infection contain some universal features.

## 2.8 VIRAL DETERMINANTS

The ability of mutation of HIV viruses is a factor which has complicated the progress in biomedical research. Consequently, the different biological qualities of the different HIV viruses are probably crucial determinants in the unequal spread of the pandemic. HIV-viruses have two different main types, of which HIV2 is not as easily transmissible especially from mother to child and its period of latency is longer. The HIV1 is prevalent in Rwanda, Uganda, Malawi, Zambia, Zimbabwe, Central African Republic, Kenya, Tanzania, Congo and Zaire. The HIV-2-epidemic is concentrated mostly in West-Africa, and somewhat curiously, in previous colonial states of Portugal, Angola, Kap Verde, Quinea-Bissau and Mozambique. In addition, HIV1-viruses have several sub-groups an the so-called strain O, which in the future may be labelled as HIV3. It is known that there exists variation in the transmissibility as well as in the disease the HIV viruses cause, but the laboratory results are not directly applicable to the actual spread of the epidemic. This branch of HIV research is however proceeding and provides important information. A recent study in Thailand (Kunanusont et al. 1995) showed remarkable variation in the transmissibility between the highly infectious A/E subtype, mostly transmitted by heterosex, and the less infectious subtype B, which was common among intravenous drug users. It is therefore possible that the differential spread of AIDS could partially be due to circulation of different HIV subtypes and their different infectiousness in different areas and populations.

## 3. DISCUSSION: THE BENEFITS AND DIFFICULTIES OF A MULTIDISCIPLINARY APPROACH

It is evident that many HIV-linked factors cited above are restricted to specific sub-groups and specific populations and thus explaining only a small proportion of the epidemic in sub-Saharan Africa. Nevertheless, these epidemiological differences raise important questions on the determining conditions of an epidemic to break loose or to remain under control. As a world-wide epidemic AIDS has increased the interest in multidisciplinary research in epidemiology, but in fact these kinds of questions have been set forth already some decades ago. For instance, the question why chicken pox has been one of the major causes of high mortality rates among children in Africa was given attention as in countries with a high standard of living it is a relatively harmless disease. For a long time children's malnutrition was believed to be the obvious reason to the fatality of chicken pox in Africa. Later on, the works of Peter Aaby (e.g. 1989) have proved that the explanation is insufficient. Instead, the lethality of chicken pox epidemics is highly dependent on demographic structures and patterns of contamination. Especially overcrowding increases the severity of the chicken pox epidemic as the virulence tends to become stronger when the disease hits many people at the same time. The

works of Aaby illustrate the importance of an interdisciplinary approach of social sciences and medicine. Being a sexually transmitted disease, AIDS is eventually much more dependent on behavioural factors than chicken pox.

In spite of the interplay of biological, demographic and behavioural factors in the spread of contagious diseases, the co-operation between social scientists and epidemiologists does not have long traditions. Demographers, physicians and anthropologists have different priorities, different viewpoints and suspicions against the methodological approaches of the other. The reasons for the suspiciousness are probably deep-seated in the course of the education received: Physiologists wish to do experiments *in vitro* as all irrelevant factors can be ruled out. When studying *in vivo*, the effects of intervening factors are minimized by increasing quantitative data. For instance, a medical follow-up research on male circumcision and HIV would be realised by identifying a large number of uncircumcised and circumcised men living in as identical circumstances as possible, and by studying their seroconversion within a certain time period. Demographers, in turn, are not so much interested in laboratory results. The emphasis would be on how the variables of circumcision or lack of circumcision are associated with HIV-prevalences. Finally, anthropologists would focus their research on studying the cultural meaning of circumcision among a specific ethnic group. They would be reluctant to generalize their findings to other parts of Africa.

Some of the difficulties of multidisciplinary research rise from choosing a terminology that would satisfy different specialists. Classifying people or behaviour is unavoidable, but definitions are made from very different points of departure. For instance, concepts such as 'prostitutes' or 'promiscuity' are one of the most problematic ones. They are used by demographers and medical scientists for epidemiological models for purpose of referring to an anonymous population having multiple partners. An epidemiological process requires that a sub-group is first infected to a significant degree before it contaminates another. In this regard it could be said that 'prostitutes' as a sub-group are in a key position as an increased HIV-prevalence among prostitutes usually predicts a beginning of an epidemic in a wider population (Auvert 1994). For anthropologists the scope is different. They would first analyse the contents of 'prostitution' and 'promiscuity' and ask for indigenous expressions to the phenomenon. Finally, they would find out the reality of what is called 'prostitution' or 'promiscuity' is much too complex to fit the basic assumptions of an epidemiological model created by demographers.. Moreover, studies on prostitution have mostly been concentrated on women, not the clients, partly because the former group is more easily identifiable. This bias in research can be criticised as viewing 'prostitutes' and women in general as viral vectors alone. Thus, the disciplines would continue to live in worlds of their own.

The examples I invented above are, of course, simplified generalizations, but their purpose is to illustrate the differences in approaches. Disagreements around the relevant notions concerning sexual behaviour are perhaps inevitable as the concepts of sexuality, fertility and population connote different things to different disciplines of science. This problem has been exposed in the polemic that has risen

from the Caldwell's (1989) outlinings of the contrasts between 'Eurasian' and 'African' sexuality. By referring to numerous anthropological research the Caldwell's conclude that African permissive attitudes toward sexuality would be the underlying factors that have contributed to the exceptionally high HIV prevalences. The permissiveness in turn would result from African patterns of land ownership, family structure (adhering to lineage instead of marital bond), and beliefs that promote fertility as a supreme deity. For anthropologists referring to their own field-work, Ahlberg (1994) and Heald (1995), the Caldwell's arguments are precarious generalizations stemming from an eurocentric conceptualization of sexual moral. The inhibitions and taboos as well as institutions of sexual education had been totally ignored by the Caldwell's. Moreover, Ahlberg (*ibid.*) criticizes the Caldwell's for using an ahistorical approach which ignores the effects of colonialism and missionary work in African culture. Thus, for Ahlberg, the so-called permissiveness is rather a result of a cultural disorder resulting from colonial history than a genuine feature in Africa.

Interestingly, to justify their intervention to the research of culture, the Caldwell's (1989) argue that sexuality is poorly studied by anthropologists. The criticism may at first sound rather strange as anthropological literature very often deals with matters concerning sexuality. Indeed, studying how different societies are constructed inevitably demands understanding on how filiation is understood. But apparently investigating the structures, symbols or rituals is not appropriate in studies concerning an epidemic. Caraél (1995) notes that traditionally anthropological research has been mainly occupied in studying sexuality in a converted form: at the symbolical level or within institutions of marriage and filiation. The emphasis has been on structures (e.g. Lévi-Strauss), function (Radcliffe-Brown) or economy (Meillassoux). With the exceptions of Malinowski, Schapera and Mead, investigating the actual sexual behaviour has not been considered as a very legitimate approach in anthropology (Caraél 1995).

Yet another methodological dilemma is how sexual (or libinary in Freudian terms) needs should be treated in research on HIV/ AIDS epidemic. In an anthropological tradition libinary needs and social constructions are interlinked and inseparable. Nonetheless, as the voluminous work of Bastide on the relations of psychoanalysis and sociology (1950) has brought into light, there exists great methodological variation on how sexuality is conceptualized and to what extent it is assumed to be under the control of the surrounding society. The demographic approach implicitly assumes sexuality to be something like a constant need among certain age classes that are 'sexually active'. In demographic models on HIV transmission individuals in a population are calculated to have sexual relations in alternative ways. Consequently, the proposed means of preventing HIV transmission are derived from those general findings in a population. Sometimes, justified as they are, they may ignore the deep-seatedness of social institutions. In addition, individuals do not decide on their partners on the basis of demographic profitability. A question arises weather projections on how sexual relations should be organised in the African continent are once and again too hastily made by

western scholars. On the other hand, faced with the dangers of HIV anthropologists cannot afford too much admiration towards tradition that, at least in the past, regulated sexual behaviour in some profitable ways. In contemporary African societies AIDS is spreading fast and a demographic perspective may provide some general findings to explain massive epidemics. Change is required in order to prevent the spread of HIV, be it attributed to the levels of a population, community or an individual .

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