A Descriptive Analysis of Adamorobe Sign Language (Ghana)

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door

Victoria Anna Sophie Nyst

geboren te Domburg

To Kofi Adin and Abenaa Mumu
and to my father, who made me curious

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1. INTRODUCTION

Adamorobe Sign Language (AdaSL) is the sign language used in the village of Adamorobe in the Eastern Region in Ghana. The village is situated at the foot of the Akuapem Mountains, close to Aburi and has a high incidence of hereditary deafness. AdaSL is unrelated to any other known sign language. It differs from the sign languages described so far in its genetic affiliation as well in as in the social circumstances that led to its emergence. As such, a description of structural features of this language broadens our understanding of sign language structure and the influence of sociolinguistic setting and linguistic genetic affiliation on that structure.

In §1.1, the village of Adamorobe is introduced, followed by an overview of the spoken languages used in the village in §1.2. In §1.3, several aspects of the deafness in Adamorobe are explained, i.e. local and medical perspectives on the high incidence of deafness, and a description of the deaf people, their activities and their social lives is given. In §1.4, the sign language of Adamorobe is presented in short. The introduction of Adamorobe is summarized in §1.5.

The past decades of sign language research have shown a significant degree of structural similarity in sign languages of large Deaf communities. These similarities and the influence of modality and sociolinguistic conditions on their emergence are discussed in §1.6. Communities with a high incidence of hereditary deafness can potentially shed light on these questions and the village of Adamorobe (Ghana) is such a village. In §1.7, questions and hypotheses with respect to the form of AdaSL are formulated, as well as their implication for sign linguistic theory. In §1.8, the methodology of this study is described, followed by an overview of the orthographical conventions used in it in §1.9. The last paragraph, §1.10, presents the outline of the book.

1.1.   A social and economic sketch of Adamorobe

Adamorobe[1] is a village in the Eastern Region of Ghana situated about 40 kilometres from the capital Accra. The village is located in a bowl-shape valley at the foot of the Akuapem hills. A partly paved road of about three kilometres leads to the main road. A two-kilometre footpath uphill connects the village with the district capital Aburi.

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[1] The name of the village is also found spelled as Adamarobe, Adamrobe, Adabrobe, and Adammobe.

The main economic activity in Adamorobe is agriculture. Recently, people have started extracting stones from an open stone quarry at the entrance of the village for commercial purposes. Together with the recently founded stone factory, these job opportunities have attracted workers from outside the village. In addition to labour immigrants, commuting workers are settling in Adamorobe, because of its vicinity to the capital Accra. Land is being sold at a high rate and on some plots construction has already started. The village is changing rapidly in the constellation of the population as well as in outlook and is likely to become a suburb of the capital.

The village is unusual in having a female chief, Nana Osei Boakye Yiadom II, who at the same time functions as ɔhemma or queenmother. She is the second female chief of Adamorobe and is based partly in Aburi and in New York (USA), Aburi being one of the old, established towns forming a line on the Akuapem ridge. The village, Adamarobe, has two African American subchiefs. There are relatively many Christian denominations in the village. The local Akan religion is actively practiced as well and the village houses the shrines of Osadu, Akonedi, Omangyina, Amanfo, Nyampɔnyaw, and Adamorobe Ayisi (Census, 1960). Many inhabitants of Adamorobe do not work on the land on Thursdays, observing the day of Asase Yaa, the earth goddess. Instead, the people of Adamorobe often walk to the Thursday market in Aburi, to make purchases and sell their crops. Adamorobe has close ties with Aburi. Many people have relatives in both Adamorobe and Aburi. The chiefs of Adamorobe usually have their residence in Aburi. Ties with the neighbouring Gã villages of Oyibi and Saduase, are less close and complicated by disputes about land.

1.2.   Spoken languages

Akuapem Twi is the primary spoken language in Adamorobe. Together with Asante Twi, Fante and other dialects, Akuapem Twi is a dialect of Akan, which is a Kwa language, a branch of the Niger-Congo language family. Akan has noun classes, grammatical tone and is a typical serialising language, with serial verb constructions expressing -among others- motion (Dolphyne, 1988; Osam, 1994; Saah & Ejike Eze, 1997). An extensive grammar (1875) and dictionary (1933 [1881]) were published by Christaller, member of the Basel Mission. Living between the Gã-speaking villages of Oyibi and Saduase, most hearing adults also have a good command of the language of their neighbours, Gã (Gã-Dangme, Kwa, Niger-Congo). The official language of Ghana is English, of which most hearing adults in Adamorobe have an -in many cases limited- command. There is one school, leading up to Junior Secondary level. School attendance in general is low; more than half of the children of school-going age have never attended

school. Those few continuing to senior secondary level go to Aburi, the district capital at about two hours walking distance from Adamorobe.

1.3. Deafness in Adamorobe

1.3.1. National and local perspectives on deafness

Adamorobe is known nationwide as the "deaf village", because of its unusually high incidence of deafness. The Akan word for 'deaf person' is ɔso-ti-fo, literally 'ear-snap-person'. Also used is the term *mumu*, but this is perceived as pejorative by some (Oteng, 1988). The social position of Deaf people in Ghana is importantly influenced by whether or not they are part of a larger Deaf community. Studies addressing the position of Deaf people in Ghana are Sarkodee (1983), cited in Miles (2005), and Okyere & Addo (1994). Oteng (1988, 1997) describing the establishment of Deaf education in Ghana and her own life respectively, write about the experiences of Deaf children and adults in Ghana. This includes the description of a conventional gesture meant to insult deaf people. Holding a leaf between the lips, this gesture implies that deaf people are leaf-eating animals, rather than humans. Having a high incidence of deafness, attitudes towards deafness are different in Adamorobe as compared to other parts of Ghana. Stan Dery -a Deaf education specialist in Ghana- gives the following explanations encountered in Adamorobe for the high prevalence of deafness in the village (Dery, 1981:68):

> "One explanation the inhabitants offer for the unusually large deaf population in Adamorabe (sic) is that the town is ruled over spiritually by a deaf god who makes the offspring of any couple deaf if they have done something to offend him. They cite the unrythmic manner in which the priestess, the messenger of the town god, dances when possessed by his spirit as proof of the deity's deafness.
> A second legend is that there is a stream on the outskirts of the town whose water must not be fetched by anyone for domestic purposes because of its sacred nature. The inhabitants are not even allowed to go near the stream on certain days of the week. Those who dare to break these taboos are punished with deaf children.
> Another story is that long ago, there was a handsome strong deaf young man in the town with whom every woman and girl, irrespective of whether they were married or not, sought to have a child because of his charming looks. This irresistible deaf man, it is believed, sowed the seed of deafness in town. No one knew neither where he came from nor when he left the town.

> The last legend is that at one time in its history, Adamorabe was at war with a neighbouring town. Before it could be over-run by its attackers, the tottems (sic) of the people of Adamorabe took human forms and came to their aid thereby enabling them to eventually win the tough war. Thereafter, the animals however refused to leave the town and therefore manifest themselves in children who are born deaf."[2]

During my fieldwork, I encountered two more stories relating to the high incidence of deafness. The following explanation was heard and recorded in Adamorobe. During the war at Katamanso (1826), Adamorobe warriors used a special concoction that made them fierce in battle, but which, on return, appeared to have left them deaf. Outside of Adamorobe, a doctor from Accra told the story of small goats, abundant in Adamorobe, who used to enter the houses of the villagers, when these were away doing farmwork, and would dress up like humans. Some farmers returned unexpectedly, surprised the goats, and were bewitched and left dumb by the goats so that they could not give away the secret.

Amedofu, Brobby & Ocansey (1999) mention the same four explanations also given by Dery, though slightly revised. As for the first explanation, they mention the name of Adamorobe Kiti as the deaf god. As for the second explanation, they talk about a pond instead of a stream. This is meaningful, as the water generally indicated to me as causing deafness is the stream between Adamorobe and Aburi. However, this stream is the seat of the god Adamorobe Ayisi, rather than of Adamorobe Kiti. The seat of Kiti is actually a red, stagnant water.

The handsome deaf man in Dery's third explanation is less mysterious in the version of Amedofu et al. as he is presented as one of the founders of the village. Dery's last quoted explanation is in part rendered by Amedofu et al. (1999:63) as

> "…at one time in the past, when the people of Adamarobe were engaged in a war with a neighbouring tribe, the "god" (sic) Adamarobe Kiti invited some animals from the bush to help them to fight the enemies."

The above discussion may give the impression of a haphazard collection of largely unrelated explanations. However, most of the explanations can be interpreted as manifestations of the deaf god, Adamorobe Kiti or Ayisi, mentioned in the first explanation. Whether or not Adamorobe Kiti and Adamorobe Ayisi are separate gods and what their relation is with the deafness in Adamorobe needs further clarification. The reference to the war at Katamanso can also be related to a deaf god, as the application of a

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[2] I thank M. Miles for bringing this publication to my attention.

supernatural protection is normally the work of a priest(ess) serving a particular god, in this case probably the deaf god.[3] Frishberg (p.c.), who stayed in the village for two weeks (see below), mentions being addressed in sign language by a dancer, possessed by a god.

1.3.2. Medical perspectives on deafness in Adamorobe

During a medical survey in 1961, Sir Alexander Drummond noticed an unusually high incidence of deafness in Adamorobe. Out of a total sample of 400 inhabitants, 45 were found to be deaf at that time. Deafness was then estimated to occur in more than 10% of the population at that time. Following the discovery of this unusual situation, J. B. David, a British ear, nose and throat consultant, was asked by the Ministry of Health to do research into the deafness in Adamorobe. In 1963-1964, he spent one day a week for several weeks following up family trees in the village. One of his conclusions was that the village is "a magnet for deaf persons who came to live there with their kind" (David, 1972:64).[4] In 1970, David's research is followed up and a medical team including David himself visited Adamorobe (David, Edoo, Mustaffah & Hinchcliffe, 1971). They note that contrary to David's earlier conclusions, the high incidence of deafness is genetic and not the result of immigration of deaf persons: "in one or two (cases,VN) we could see how a normal family became affected by one disastrous, old great grandmother" (David, 1972:62). More women than men were found to be deaf (3:2). In the deaf subjects of their study, no medical abnormalities were found to accompany deafness. The chief of the village explained to the researchers that the community would know when a baby was deaf as the elder women would observe that the baby has a monotonous cry. This suspicion would then be tested by stamping on the ground and judging the (lack of) reaction of the baby.

Amedofu et al. (1999) follows up on the research of David et al. (1971), updating the information on the prevalence of deafness as well as establishing the audiometric characteristics of the deafness in the village. Deaf people are found in 14 families, 45 deaf members were identified of

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[3] Kwamena-Poh (1973) reporting on the oral traditions of Akuapem writes that early Akuapems of Guan origin were headed by a priest-leader: "for instance, when there was a declaration of war by a neighbouring town, a feature which the traditionalists say was common, direction of the gods was sought and men 'ate fetish', that is they swore an oath officiated over by the priest, to fight to the end while they received the priest's promised protection and success. (p.134)"

[4] I thank M. Miles for bringing this article to my attention and making it available to me.

whom 38 were then alive. Only 30 deaf persons participated in their study. All were born deaf and never developed speech. The mean age of 32.4 years noted was interpreted by the team as an indication that the deaf population in the village is ageing. Later studies of this research team, a joint project of the Kumasi Centre for Collaborative Research in Tropical Medicine in Kumasi and the Bernard Nocht Institute for tropical Medicine in Hamburg, identified a recessive R134W mutation in the connexin 26 gene (GJB2:MIM#121011) as the cause for the hereditary profound sensorineural hearing impairment in Adamorobe. On the time-depth of the mutation, they noted:

> "It was of interest to see that among the families in our study, the disease haplotypes differed greatly (data not shown), indicating that the mutation arose at least 60 generations ago. This finding underlines the stability of the village community studied, and in addition, it shows that the mutation has had several centuries to spread into surrounding populations and possibly across the ocean." (Brobby, Müller-Myhsok, and Horstmann, 1998:550)

Frishberg (1987) states that deafness occurs in the village "as long as anyone remembers". A long history of deafness in Adamorobe is supported by the explanations given by the inhabitants. A deaf god in the pantheon, reference to war times dating back to at least 1826, and reference to the settlement of the village all suggest an imbeddedness of deafness in the identity of the village and a considerable time-depth.

   In a subsequent study, Hamelman et al. (2001) find that the same R134W mutation accounts for deafness in 90% of 121 genetically deaf children from all over Ghana. Meyer, Amedofu, Brandner, Pohland, Timmann & Horstmann (2002) describe changes in skin and sweat production in carriers of the mutated gene in Adamorobe. These changes give more protection against microbes, pathogens, and insect bites, the team argues. The mutated gene with its superior skin and sweat is favoured in natural selection, counterbalancing the (assumed) evolutionary disadvantage caused by deafness, just as protection from malaria counterbalances the disadvantage of sickle cell anaemia.

   The main relevance of the medical studies above for our purposes is their finding that the mutation that is responsible for the deafness is much diversified in Adamorobe. This implies that it must have arisen centuries ago and that the community has been stable.

1.3.3. History and prevalence of deafness in Adamorobe

Adamorobe may have started out as a hunting camp. Ms. Agnes Bomo, an elder inhabitant of Adamorobe, told the following story of the settlement of Adamorobe. A hunter came to the place that is now Adamorobe. He found

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the place to be rich in animals for hunting and plants for consumption, especially pineapples, *aborɔbɛ* in Akan. He decided to settle there and referred to his settlement saying *'medan m'aborɔbɛ'*, meaning 'I depend on my pineapples'. The present name of Adamorobe would be derived from that phrase. Indeed, there is some variation in the pronunciation and spelling of the place name, one of the variants being Adabrobe. According to the former chief Nana Kwaakwa Asiampong II, mentioned by Frishberg (1987), Adamorobe may have existed as a settlement for over 200 years. Okyere and Addo (1994) seem to base their estimation on the same indication of two centuries as they mention "the curiously precise date of 1773 (Miles, 2005)" as the founding year of Adamorobe, without further substantiation. Kwamena-Poh (1973:130) estimates a similar time-depth for a number of villages in the area, possibly including Adamorobe:

> "The number of small villages near Aburi and which are now recognized as within the Akuapem state on the Aburi-Accra and Aburi-Nsawam motor roads owe their origin from Aburi, and are recent, not earlier than the second half of the eighteenth century".

The percentage of deafness given for Adamorobe in various studies varies widely, from 1,6% to 15%.[5] Table 1.1 below presents the total number of inhabitants in Adamorobe from 1931 to 2000 (Census). Estimates of the number of deaf people were given in 1961 in David et al. (1971), in 1995 in Amedofu et al. (1999). The number of deaf inhabitants in 2001 is based on a count in that year carried out by me during fieldwork.

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[5] Amedofu et al. (1999) base their 1,6% on a total population of 2431 referring to the 1984 census. This census however gives a total number of inhabitants of 1.171. Frishberg gives an incidence of 15% -which seems much too high- and mentions no source.
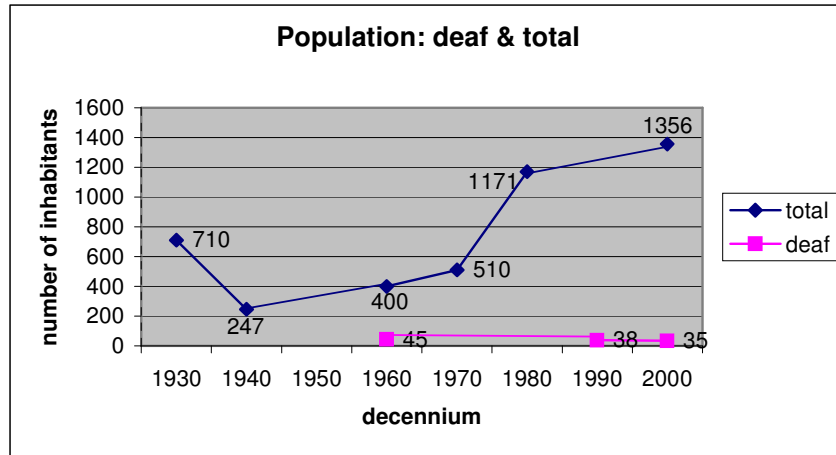
Total number of inhabitants   Total number of deaf inhabitants
(National Census)
1931 710   1961 45 Drummond in David et al. (1971)
1948 247   1995 38 Amedofu et al. (1999)
1960 400   2001 35 Nyst (present study)
1970 532
1984 1.171
2000 1.356

Table 1.1 Total number of inhabitants and number of deaf inhabitants

The rate of deafness has strongly declined in recent times: from 10% in 1971
to around 2% at present (David et al., 1971; Amedofu et al., 1999). Amedofu
et al. (1999:18) relate the "dramatic reduction in the incidence of deafness at
the village" to:

> "the genetic counselling given by the medical team to discourage
> intermarriages among the affected families have proved effective
> in controlling the spread of the disease in the village."

Note that though the number of deaf persons has decreased, the fall was not
dramatic: from 45 in 1961 to 35 in 2001. Dramatic changes can be seen,
however, in the numbers of the total population throughout the past century.
In 1948, the population appears to have decreased considerably, followed by
a rapid increase that continues up to present. The extreme drop in the 1948
count seems to be the reflection of the disastrous swollen-shoot epidemic
that destroyed the cocoa industry in the area (Brokensha, 1972). As a
consequence, new cocoa plantations were started in the "forest area", the

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Akim area Northwest of the Akuapem ridge. Even today, people leave the village to farm in that area.

The increase of the population, 500% in 50 years, cannot be accounted for by birth alone, but is probably the result of immigration (see §1.1). The 2000 Census states that out of the 1356 persons found in Adamorobe on the evening of the 2000 census, 910 claimed to be born in Adamorobe. In other words: about 30% of the inhabitants are immigrants. The high immigration rate more effectively explains the drop of the percentage of deafness from 10% in 1961 to 2% in 2001 than does genetic counselling.

The prevalence of deafness of 2% as found in Adamorobe at present is still much higher than in other parts of Ghana. Investigating the prevalence of disablties in 2,556 children in the Central Region in Ghana, Biritwum, Devres, Ofosu-Amaah, Marfo and Essah (2001) find that 0,46% of the children "had difficulty with hearing and speech (deaf and dumb)". This is close to the UNICEF (1985) estimate of 0,5% for the incidence of moderate-severe hearing loss in developing countries.

Summarizing, Adamorobe is assumed to be about 200 years old. On the basis of genetic research and oral history, we may assume that the deafness has occurred in the village since its establishment. Hence, Adamorobe Sign Language is assumed to be around 200 years old. Numbers for the prevalence of deafness are available since 1961 and show a decrease from 45 to 35 subjects. Due to a rapid increase of the total population through immigration, the percentage of deafness has gone down. The hypothesis that social patterns have contributed to the spreading of the deaf gene to an unusual extent needs further research.

The number of inhabitants in Adamorobe has changed considerably in the past. There are indications that the booming cocoa business in the early years of the twentieth century attracted immigrants, probably followed by a massive emigration to the Akim area when the cocoa plantations were destroyed by an epidemic around 1930. In the last decades Adamorobe has been attracting people from outside again because of job opportunities in the village and the rapid expansion of Accra. Such a mobile and fluctuating demographic pattern is not expected to coincide with a high incidence of hereditary deafness. A high incidence of deafness is typically expected in relatively isolated communities, such as the classical case of Martha's Vineyard (Groce, 1985). Groce describes the increased mobility of the islanders as the main reason for the decline of deafness on the island. Though Adamorobe lies in a valley, there has been considerable movement in the population. Therefore, the high incidence of deafness can not been ascribed to an isolated position of the village.

So, how can the current high incidence of deafness be explained for this village? It is not clear to what extent the village or the stable core of it forms a closed community, which would have a similar isolating effect. Possibly, the tradition of cross-cousin marriages is explanatory, but establishing this needs more (anthropological) research.[6] A socio-historical study of the village, similar to the one done on Martha's Vineyard would probably yield interesting insights. Groce (1985) argues that one of the founding fathers of the community on Martha's Vineyard carried the deaf gene from Kent (UK). In the local explanations reference is made to a deaf founder for Adamorobe as well. The presence of a genetic specification for deafness in one or more persons founding a new community provides an ideal opportunity for this specification to spread in all of the later generations of the expanding community. Such a "founder effect" may be based not only on the size of the gene pool, but also on the social position of deaf people, who are likely to be core members of the founding families.

1.3.4. Deaf education

On a national level, with twelve primary schools, two secondary technical schools and a teachers training course at the University of Winneba, deaf education is relatively well-established in Ghana. It was started in Ghana in 1957 by the legendary African American Deaf missionary Rev. Andrew Foster, Africa's Gallaudet (Oteng, 1988, GNAD, not dated.) who opened a school for the Deaf in the Christianborg Castle in Accra, which later moved to Mampong-Akuapem, not far from Adamorobe. Reportedly, plans to move the school to Adamorobe were cancelled due to local politics. Rev. Foster used signed English with American Sign Language (ASL) signs in his schools. In 1962, government took over deaf education and Rev. Foster continued setting up schools for the deaf in 30 other African countries.[7] Foster also visited Adamorobe, preaching to the deaf and distributing goods to them (Oteng, 1988). Ghana has had its share of the oral-total communication controversy. Nowadays most schools use a form of Signed English. More information on the history of deaf education in Ghana is found in Amedofu (1993) and Oteng (1988).

Under the chief preceding Nana Kwaakwa Asiampong II, the deaf children were not allowed to go to school outside of the village (Frishberg, 1987). This meant they were deprived of education, until the establishment

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[6] In the Al-Sayyid Bedouin community, where cross-cousin marriages are common, genetic testing and consequently counselling to discourage family members from marrying each other has proven ineffective, as having deaf children is considered a minor problem as compared to remaining unmarried (Kisch, 2000).
[7] Source: http://www.cmdeaf.org/, viewed in June 2006.

of a special school for the deaf in the village around 1987 by Mr. Adu and Rev. Foster. The latter died in a plane crash before the school was opened. A few months after opening, the school was closed down again, following a conflict between the pupils and the teacher. Signed English was probably the means of instruction. The original school building still stands, but is now used for the nursery classes of the mainstream school. Nowadays, deaf children -if they can afford it- attend the boarding school for the Deaf in Mampong-Akuapem where Ghanaian Sign Language (GSL) is used and only come to Adamorobe in the holidays. GSL is related to ASL. It is the 'offspring' of Signed English introduced with deaf education in Ghana by Rev. Foster. More research is needed on GSL. At present, only a vocabulary is available (GNAD, not dated). Deaf pupils are taught to read and write in English, this being the official language in Ghana. As most deaf adults have only attended the school for the Deaf that existed in Adamorobe for less than a year, they are all illiterate.

1.3.5. The deaf community

Studies of communities with a high incidence of deafness describe the lack of a distinct social group whose membership is based on a shared Deaf identity, a Deaf community (Kisch, 2000, 2006; Washabaugh, 1986). At the time of the fieldwork (2001), the deaf people numbered thirty-five. Ten of these were minors, the youngest being born in 2001. Six of them were attending the school for the Deaf in Mampong-Akuapem. Three deaf people were elderly. Not all deaf people in Adamorobe were born there, nor are all the deaf people born in Adamorobe actually living there. One deaf person, a former president of the Ghana National Association of the Deaf (GNAD), has moved to Adamorobe later in life. He uses GSL. Other deaf people born in Adamorobe have moved to Accra or to the forest area to the North West of Aburi to farm there. Typically, deaf people in Adamorobe live in hearing families, with one, two or no deaf family members. This is the pattern to be expected for a recessive genotype. Living, working and interacting with hearing people, the deaf people do not seem to form a separate group with a distinct Deaf identity.

  In the past decades, there has been increasing awareness that in many places of the world deaf people form cultural minorities within the larger hearing societies (Lane, 1992; Van Cleve & Crouch, 1989). Both deaf people and hearing people may be part of such Deaf communities. One of the hallmarks of Deaf communities is assumed to be the fact that they mainly use the visual-manual modality for communication. To distinguish between

the physical state of deafness and the cultural state of Deafness, the former is written with a small d and the latter with a capital D.

Basing myself on participant observation, it seems that a subgroup of about fifteen people constitutes an emergent Deaf community. One family with a notably higher number of deaf members plays a central role in this emergent community. This family has nine living deaf members in two generations. The adults, four brothers and one sister, all live on the large family compound, together with their hearing family members. Most of the deaf members have deaf friends or partners. A hearing woman of this family married a deaf man and they had two deaf daughters. Deaf friends and partners of this family tend to work together. After work, they meet and chat on the family compound or on the market with deaf and hearing friends and family. The hearing members of these families are good signers. The group thus socializing on a regular basis overlaps in part with the group of deaf people attending the Lutheran Church of the Deaf convening every Sunday. The service is lead by Mr. Akorful, a deaf priest coming from Accra. He preaches in GSL and used to be translated into AdaSL by the late Kofi Adin.

The former president of the GNAD acts as the spokesman of the deaf people. Ms. Agnes Bomo, daughter of deaf parents and sister of deaf siblings, acts as their interpreter in contacts with people from outside Adamorobe.

Although deaf people are "considered full citizens for the purposes of communal labour, taxes, and other responsibilities of adult life" (Frishberg, 1987:78), there are restrictions in functioning when it comes to marriage and public office. As for marriage patterns, David et al. (1971:71) note that

> "in general, deaf villagers tended to marry one another and the normally hearing, one another, although sometimes, since polygamy occurs, a normally hearing man would take a deaf woman as his second wife."

Former chief Nana Kwaakwa Asiampong II prohibited marriage between two deaf persons. It is not clear whether this was the result of the genetic counselling given in 1972, as claimed by Amedofu et al. (1999:14), probably given by the team of David (see §1.3.2). Though deaf women seem to have no problem in finding partners for marriage, it is generally believed that marrying a deaf man will result in deaf offspring. As a result, most deaf men have no children. No mention of a gender bias of the deaf mutation is made in the medical literature on Adamorobe. It is not clear to what extent the restrictions on deaf-deaf relations are still officially in function, as deaf-deaf marriages do occur. There are no records of a deaf person ever having become chief of the village.[8]

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[8] This is probably related to the customary requirement in Akan culture for

There are several indications that socialisation on the basis of a shared Deaf identity is a recent phenomenon in Adamorobe. Since the independence of Ghana in 1957, the high incidence of deafness has attracted the attention of those outside of the village and an increasing number of initiatives in Adamorobe were developed, aiming exclusively at deaf people. These initiatives concerned mission, education, aid, and research, but also tourism and art. Singling out the deaf, they may have contributed to a sense of Deaf identity.

Thus, although most of the deaf of Adamorobe socialize mainly with hearing people, a subgroup can be seen as an emergent Deaf community. For the generation of deaf people that now attends the school for the Deaf, this sense of Deaf identity will be even stronger.

1.4. Adamorobe Sign Language

David, whose hearing was impaired, notes that, "The deaf adults had a remarkable way of communicating by clicks and mouthing and hand signs which would be well worth filming" (David et al., 1971:72). At the outset of this study, the only information available about the structure of the sign language of Adamorobe was one page in the Encyclopaedia of Deaf People and Deafness (Frishberg, 1987). During a stay at the Mampong School for the Deaf, Frishberg stayed in the village for two weeks, studying the sign language. She coined the name Adamorobe Sign Language and its acronym AdaSL. Locally, the language is called *mumu kasa*, literally 'deaf language'. Frishberg made three film recordings of about 5 minutes each. She notes (Frishberg, 1987:79):

> "AdaSL has traditional greetings, ritual insults, and the capacity to function in every context where one might need to communicate. The signing abilities of different individuals do not differ markedly; for the most part, all of the deaf people are fluent, productive, and communicative."

AdaSL is the primary means of communication of all adult deaf inhabitants (except one deaf immigrant who uses Ghanaian Sign Language, Akan and English). Though most hearing villagers communicate relatively easily with deaf persons, proficiency in AdaSL depends on the degree of contact and ties with deaf persons.[9] Interestingly, those hearing persons who have a good

candidate chiefs to be complete or without physical impairment.

[9] In Desa Kolok, a village on Bali with a similarly high incidence of deafness, all family members of deaf inhabitants are classified as fluent signers as well as a much larger number of non-family members. Out of the 568 fluent signers in the village,

command of AdaSL were also found to use a third fluent language form, blending AdaSL signs with spoken Akan.[10] AdaSL is an old, established sign language. Oral history and genetic research indicate an imbeddedness of deafness in the history of the village, which itself seems to have been established towards the latter part of the eighteenth century. AdaSL is unrelated to Ghanaian Sign Language, the language used in Ghana's schools for the Deaf. Yet, the growing influence of GSL is visible in the form of loan signs and is ultimately threatening the continued use of AdaSL.

A number of factors determine how endangered a language is. These are among others 1) the size of the population and the community of speakers, 2) the community's internal organisation and the way it perceives its own language, 3) the position of the language as an identity marker and 4) the number of children who learn it as their first language (Brenzinger, 1998; Hagège, 2001; Wurm, 1998). The size of the population crucially depending on AdaSL is very small, 35 deaf persons. Although Ghanaian Sign Language (GSL) seems to have a higher status than AdaSL (all the deaf have, for example, adopted GSL sign names), hardly any negative or positive judgements on AdaSL were encountered. The function of AdaSL as an identity marker is not clear either, probably as a consequence of the absence of a strong feeling of Deaf identity. A spoken language in a monolingual situation with 35 speakers is considered a seriously endangered language. In Adamorobe, however, this seems to have been a stable number for the deaf in the village for decades. The large majority of child speakers in Adamorobe goes to the boarding school Mampong-Akwapim, as noted in §1.3.4. Their primary language appears to be GSL. Only in communicating with persons having no command of GSL, they turn to AdaSL. How this will work out in the future remains an open question. Either deaf AdaSL signers will become stable bilinguals in GSL, not giving up AdaSL because of their communication with the hearing, or they may choose to live in a place with a larger Deaf community when adult, shifting completely to GSL.

In part, the factors determining how endangered a language is work out differently for sign languages of deaf people. While hearing speakers of an endangered spoken language have access to other spoken languages, deaf

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only 41 are deaf (Marsaja, 2003).

[10] The Akan in this variety slightly differs from standard spoken Akan, at least at the lexical level. For example, the standard word for mother *maame* is replaced by *nufunufu,* which is standard Akan for 'breasts'. The accompanying AdaSL sign WOMAN/MOTHER refers to breasts. Similarly, to refer to an old person or grandparent, the standard Akan *nana* is replaced by the mouthing of the sign OLD-PERSON *fitafita,* meaning 'white' in standard Akan (Fig. 3.6). Also, the volume of the voice is often not very high nor stable in this mixed form. A similar naturally arisen mixed form is found on Providence Island as well (Washabaugh, 1986:82).

people depend on a signed language. Shifting to spoken Akan is not an option for the deaf inhabitants of Adamorobe. Shifting to GSL is a possibility, but would make communication with hearing people in the village impossible. The dependence of deaf people on sign language on the one hand and the need to communicate with hearing co-villagers is likely to diminish the effect of some of the factors known to threaten the vitality of a language. Yet, the first step towards a shift to GSL has been made as this language has already become the primary language of the school-going generation. As it is beginning to lose child speakers, AdaSL should be classified as potentially endangered.

1.5.   Summary

Adamorobe appears to be a village in existence for more than two hundred years having been established at the end of the eighteenth century. It has seen considerable migration due to rapid development and the consequent fall of the cocoa industry in the area and later due to increasing job opportunities in the village and the rapid expansion of Accra, the capital. This aspect of the village, a steady flux of inhabitants, is not commonly associated with a high incidence of hereditary deafness. Sociological research is needed. The sign language may be at least as old as the village, as oral history relates the deafness to war-time and the settlement of the village. Genetic research indicates a time-depth of at least several centuries for the gene mutation responsible for deafness in the village. How these facts can be related to the age of the sign language is not entirely straightforward, but the sign language should definitely not be qualified as a young sign language. The language is used by about 35 deaf signers and their hearing relatives, friends and other contacts. As a result of education, the primary sign language of the school-going generation appears to be GSL, a Ghanaian version of American Sign Language (ASL). AdaSL must be classified as a potentially endangered language.

1.6.   Structural similarity in signed languages

The sign languages studied so far are mostly used by deaf people who are part of a larger Deaf community. These sign languages tend to have a number of striking similarities in their sociolinguistic settings (Johnston, 1989). Bound by a feeling of a Deaf identity, the members of a Deaf community have a socialisation pattern that is largely separate from the wider hearing, non-signing community. Sign languages of large Deaf communities are the primary language of most members, who are mainly

physically and culturally deaf people. Sign languages of large Deaf communities have a trans-generational transmission that is atypical for spoken languages. Pre-lingual deafness being relatively rare on average worldwide (between 0,1% - 0,01%), Deaf communities and their sign languages are typically assumed to arise as a result of the concentrating effect of Deaf education, as has been documented in Nicaragua (Kegl, Senghas & Coppola, 1999). Yet, some Deaf communities are known to have arisen outside of an educational context, such as the communities using Langue de Signes Malienne (Pinsonneault, 1999) and Maganar Hannu (Hausa Sign Language) in Nigeria (Schmaling, 1999). Only a small proportion of the members of large Deaf communities are native signers, as only an estimated 5% of Deaf children are born to Deaf parents. As a result, most adult members of the large Deaf communities acquired sign language only after entering school. Not only is the onset of sign language acquisition delayed, but also the input is inconsistent in containing several mixed and learner varieties of signed communication. Consequently, Gee & Goodhart (1985) claim that ASL recreolizes with every new generation. The same claim can be extrapolated to most other sign languages of large Deaf communities, as they show a similar pattern of acquisition. Lacking a conventional and extensively used writing system, and requiring advanced technology to communicate at distance directly in sign language, sign languages are mostly used in face-to-face communication.

The set of sign languages studied so far is regionally biased. Thirty years ago, mainly Western sign languages were the object of research. More recently, Asian and South-American sign languages have been included. Studies on African sign languages are limited in number and mostly only lexicographic. Exceptions are a description of the phonology and morphology of Maganar Hannu or Hausa Sign Language, used in the Northern part of Nigeria, an inventory of sentence types in Kenyan Sign Language (Akach, 1991) and several formal studies on South-African Sign Language, including Penn & Reagan (1994), Aarons & Morgan (2003). Sign linguistic research in the past few decades has revealed both similarities and differences across sign languages of large Deaf communities. In his thesis on Australian Sign Language, Johnston (1989:209) devotes a full chapter to the structural similarity of sign languages of large Deaf communities studied so far and states:

> "Though it is undoubtedly premature to assert the fundamental identity of all natural sign languages on the morpho-syntactic level, since the sign language of many signing communities is usually only described in terms of phonology and lexicon with only cursory treatment of morpho-syntactic patterning, there does seem to be some need, even at this early stage, to account for the

> apparent convergence in morpho-syntactic patterning that seems to
> be emerging."

Examples of structures recurring in sign languages of large Deaf communities are:
- classifier constructions for the expression of motion and location events,
- non-manual elements for grammatical marking,
- verbal inflections for number, person and aspect,
- a handshape, a location and a movement to build a sign,
- simultaneous constructions.

In addition, Johnston (1989:209) mentions the following characteristics:
- topic prominence,
- a lack of inflection for tense,
- regular omission of redundant subjects,
- serial verb constructions.

Thus, similarities are found in the basic structures used to create meaning, as well as in the basic organisation. Differences are found in the actual forms used, restrictions on their behaviour, the number of distinctions made, and the degree of conventionalisation. For example, whereas all sign languages of large Deaf communities are found to use classifier constructions for the expression of motion and location events, sign languages differ in the actual handshapes used to represent specific groups of entities. In NGT, the classifier representing moving human beings is an upright Index hand. In Chinese Sign Language, this is a Y hand, a handshape with both thumb and little finger extended. For NGT, a large number of entity classifiers has been described (Zwitserlood, 2003), whereas in Indo-Pakistan Sign Language only two entity classifiers have been found (Zeshan, 2003). ASL and Israeli Sign Language differ in the degree of conventionalisation of their classifier system (Aronoff, Meir, Padden & Sandler, 2003). In general, the degree of structural similarity between sign languages of large Deaf communities seems to be higher than between spoken languages. In the sign language literature, this structural similarity has been ascribed to several factors: the modality used, the common region of origin of the sign languages studied at a given point, their atypical acquisition pattern, and their relatively young age (Aronoff et al., 2003; Gee & Goodhart, 1985; Woll, 1983). Johnston argues that the similarity found in the structures of "many if not all sign languages" can be related to "the observation that all sign languages exist under similar sociolinguistic conditions" (Johnston, 1989:240). However, since we lack studies on sign languages of Deaf communities in dissimilar sociolinguistic conditions, it is hard to detect how and to what extent these

sociolinguistic conditions exactly influence structural properties of a sign language.

Home sign languages show that sociolinguistic conditions do matter in shaping a sign language. A home sign language is a communication system created by an isolated deaf person and his/her hearing environment. Following the French tradition, I will use the term 'home sign language' instead of 'home sign system' in this thesis (for arguments supporting this terminology, see §6.5). In societies with generally accessible formal education for the deaf, children may develop a home sign language prior to being exposed to the sign language of the Deaf community in school (cf. Yau, 1992; Morford, Singleton, Goldin-Meadow, 1995 for a study on a Chinese home signing child). Similarly, deaf children who are mainstreamed in hearing schools and trained through an oral method and to whom no manual means of communication is offered at home tend to develop home signs. The signing of such linguistically deprived deaf children has been extensively studied by Goldin-Meadow, Singleton and Morford (for a comprehensive publication of their findings, see Goldin-Meadow, 2003 and Goldin-Meadow, McNeill & Singleton, 1996). In settings lacking formal education for the deaf, probably the most common situation world wide, adult home signers may use their home signs as their primary means of communication throughout their lives.[11] Precursors of structures found in sign languages of large Deaf communities are attested in home sign languages as well, such as precursors of a classifier system (Goldin-Meadow, Mylander & Butcher, 1995), confirming the pervasive influence of the visual-modality on the organisation of signed languages. On the other hand, home sign languages are found to vary widely in structure, degree of conventionalisation and the size of their lexicon, depending for a large part on social circumstances. Comparing the signing of two deaf adults (not in contact with each other) in a village in India, Jepson (1991) finds that the signing of the deaf adult with a small, but fixed group of interlocutors shows more conventionalisation and arbitrariness than the signing of the deaf adult with a large, but unstable, group of interlocutors. Describing the home sign languages of Native American and Chinese deaf adults, Yau (1992) notes

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[11] Studies of adult home sign languages are Yau (1992), describing and comparing home sign languages of native American and Chinese adults, Kendon (1980a,b,c), investigating the signing of a more or less isolated deaf woman in Enga (Papua New Guinea), and Kuschel (1974), a study of the signing of a deaf man living on Rennell Island (Solomon Islands). Coppola (2002) follows the language development of three Nicaraguan home signers from late childhood to adulthood. Fusellier-DeSouza (2004) looks at the signing of three isolated deaf adults in Brazil. Morford (2002) has studied both child and adult home sign, including the expression of motion in the home signing of two adult Mexican immigrants in Canada.

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that there is large variation between home signers in terms of the size of their lexicon. Major factors positively influencing the size of the lexicon were sociolinguistic in nature, i.e. a) a positive attitude of the hearing interlocutors towards using gesture/signs in the communication with the deaf person and b) the size of the communicative community. Contrary to sign languages of large Deaf communities, home sign languages are functionally restricted, at least those of the communicatively deprived deaf children studied by Goldin-Meadow (2003).

Despite shared modality-specific structures in sign languages with large Deaf communities and home sign languages, the differences between these two types of languages seem to be rather large with respect to complexity and conventionalisation. Not surprisingly, the fact that a sign language is used by a large group of Deaf people gives a major impetus to the expansion of the linguistic system. Yet, what exactly it is about a Deaf community that causes or enables this expansion is not clear. The differences between home sign languages and large sign languages may be ascribed to (possibly a combination of) several factors, including age or generational depth of the language, age of the users, and the number of users.

The common assumption that sign languages of large Deaf communities develop out of a collection of home sign languages on the one hand, together with the attested structural similarities of the large sign languages on the other, has an important implication, i.e. it suggests a unidirectional developmental path for the structures of sign languages of Deaf communities. Whereas home sign languages may be quite diverse, once the circumstances are favourable, i.e. deaf people come together and communicate on a regular basis, these variable systems are input for the development of the structures attested in the sign languages of full sign languages.

In short, once a sign language is used in the constellation of favourable sociolinguistic conditions, i.e. it is used on a regular basis by a group of Deaf people, modality seems to compel the emergence of the structures commonly found in full-fledged sign languages, such as classifier predicates, non-manual grammatical marking, and simultaneous constructions, amongst others. To tease apart the effect of individual factors like age, number of speakers, and so on, we need to study sign languages that are used by communities that differ from the large sign languages studied so far in a limited number of aspects. The sign language used in Adamorobe is such a language.

1.7.   Relevance of a description of AdaSL

As AdaSL is a potentially endangered language that has barely been studied, it is important to describe and document the language in its present form. The main aim of this study is to give a description of the sign language of Adamorobe that is useful to sign linguists and scholars of African languages. Practically, it is hoped that a linguistic description of AdaSL will promote the status of this and other sign languages and their communities of users in Ghana. The time frame of the research did not allow the production of a full grammar of the language. Therefore, a number of aspects were selected for more detailed description. Those aspects have been selected for description that a) allow for a straightforward cross-linguistic comparison (such as the handshape inventory) or b) seem to be significantly different from what is found for sign languages of large Deaf communities. Concentrating on language-specific features, it is hoped that AdaSL data will maximally contribute to our knowledge about the forms a sign language may take. Moreover, this approach enables us to consider the second issue that was raised in the preceding section, §1.6, concerning the structural similarity between large sign languages. AdaSL mainly differs from the large sign languages described so far in regional affiliation and in the phenomenon that caused the concentration of deaf people.

Unlike most large sign languages studied so far, AdaSL has originated in Sub-Saharan Africa. This fact does not necessarily predict significant structural divergence, as so far the studies on the large sign languages have shown little regional variation with respect to the modality-specific structures. In addition, the few studies addressing structural features of African sign language of large Deaf communities do not report striking differences with non-African sign languages.

It is commonly assumed that the emergence of most large sign languages has been triggered by the establishment of Deaf education. Deaf schools concentrate home signers, who develop a common sign language, elaborating on the home sign languages they brought with them. This scenario is prototypically illustrated by the case of Nicaraguan Sign Language (Kegl et al., 1999). Whereas home sign languages are structurally quite diverse, the large sign languages studied so far show a significant degree of structural similarity, which is assumed to be modality-related to a considerable extent. As such, a developmental continuum of structure with home sign languages on the one end and sign languages of large Deaf communities on the other is tacitly assumed. Unlike the case of the large sign languages studied so far, the concentration of deaf people leading to the emergence of AdaSL was the result of a high incidence of deafness, rather

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than of Deaf education. Hence, AdaSL differs from large sign languages in a number of respects, creating the possibility to evaluate whether and how the particular sociolinguistic setting influences the structure of a sign language. It may also enable us to substantiate the tacit assumption of a unidirectional structural development in sign languages determined by the visual-manual modality.

The main difference between AdaSL and large sign languages probably is the pattern of acquisition. Whereas large sign languages arisen in the context of special education are characterised by a peer-to-peer transmission with a delayed onset and highly variable input, AdaSL is expected to be acquired in a way that resembles L1 acquisition of spoken languages. Though not all deaf children are born to a deaf father or mother, a deaf adult and carer is usually found in the extended family. Together with the large number of hearing signers and the communal life style, the deaf child's exposure to adult linguistic sign input seems guaranteed.

In addition, AdaSL may shed light on the factor 'time-depth'. Being an estimated 200 years old, we may expect AdaSL to have developed the individual peculiarities of a language of age. More importantly, we do not expect the features commonly ascribed to the young age of sign languages, such as a high degree of iconicity (Frishberg, 1975) and a low degree of conventionalisation (Aronoff et al., 2003), to be characteristic of AdaSL. Considering where a sign language like Adamorobe would be placed on such a hypothetical continuum, there are several possibilities one can think of. First of all, the unhampered generational transmission of AdaSL, in addition to its old age, could have allowed the development of a very elaborate type of sign language, finding itself on one extreme of the cline, with home sign on the other end, and large sign languages in between. For example, AdaSL could be expected to make even more elaborate use of typical sign language phenomena, as, for instance, simultaneous constructions and the use of space. Secondly, considering the number of deaf users of home sign languages, sign languages of large Deaf communities and AdaSL, the latter may fall somewhere in the middle of the unidirectional cline, in between home and large sign languages. Alternatively, the stability of the community of deaf users may be more influential than the number of users, by itself allowing for the development of the structures typical of large sign languages. Thus, AdaSL may be on the same end of the continuum as large sign languages. A last possibility is that the AdaSL data cannot be interpreted as finding itself on the unidirectional cline, falsifying the assumed unidirectional structural development in sign languages.

Though at the outset of this study, very little was known about AdaSL, studies on other sign languages with a high incidence of genetic

deafness create certain expectations. Communities with a high incidence of hereditary deafness are found scattered around the globe, the most famous one being the historical community on Martha's Vineyard (USA; Groce, 1985), the sign language of which disappeared before being documented. Studies are in progress on the sign languages of Desa Kolok or Bengkala in Indonesia (Branson, Miller, Marsaja & Negara, 1996, Marsaja, 2003), the Al-Sayyid Bedouin community (Kisch, 2000; Sandler, Meir, Padden & Aronoff, 2005), Ban Khor in Thailand (Nonaka, 2004), and of Kajana, a Saramaccan village in the forests of Surinam (Van den Bogaerde, 2005, 2006). Introductory articles are available on the sign languages of Saint-Elisabeth's valley in Jamaica (Dolman, 1986), the sign language of the Urubu-Kaapor in the Amazonian rainforest of Brazil (Ferreira-Brito, 1983), Cayman Island (Washabaugh, 1981) and of Amami Island in Japan (Osugi, Supalla & Webb, 1999). At present, a more extensive linguistic and sociological description is available only for Providence Island Sign Language (PISL) and its user community (Washabaugh, 1980, 1986; Washabaugh, Woodward & DeSantis, 1978). Washabaugh (1986) claims that PISL differs significantly from ASL in lacking means of ascribing thematic roles, lacking colour terms, and in an increased use of pointing and non-manual elements. Overall, he states, the sign language is highly context dependent. Washabaugh ascribes this to the absence of a Deaf identity and hence of a Deaf community. The population of Providence Island, including the deaf (about twenty on total population of 3000) does not stay in one village, but lives along the edges of the volcanic island. Even when staying in the same place, the deaf (and hearing) people on Providence prefer to communicate with hearing, rather than deaf people. Secondly, he explains the context-dependency as a result of the high degree of shared knowledge and expectations the deaf and their interlocutors have. However, Washabaugh's findings may not be predictive for AdaSL as Adamorobe is quite different from Providence Island in the incidence of the deafness as well as in its geography. The incidence of deafness is much higher in Adamorobe (2% at present, 10% in the past) than on Providence Island (0,7%) when Washabaugh did his research. In addition, the bowl shaped valley in which Adamorobe lies, ensures that all (deaf) people live very close to each other, rather than being separated by a mountain peak as on Providence Island. As for the presence of a distinct Deaf community with a preference for deaf communicative partners, the situation in Adamorobe is not homogeneous and seems to be unstable (see §1.3.5). Also, AdaSL seems to have more time-depth than Providence Island Sign Language. AdaSL, with a larger number of deaf signers, a higher incidence of deafness and a higher concentration of the village community, may turn out to be different from PISL, potentially revealing the significance of these factors.

In short, the description of structural features of an African sign language used in an unusual social setting may shed light on the question of directionality in the development of sign language structures and on the question of how the social setting influences this development. Like Providence Island Sign Language (Washabaugh, 1986), AdaSL may turn out to be lowly coded and highly context-dependent. On the other hand, differences in the geography, the incidence of deafness, and the age of AdaSL may have favoured the codification and conventionalization of the sign language. If this is the case, AdaSL will show more elaborate or conventionalized use of the structures typically found in the large sign languages studied so far as opposed to home sign languages.

1.8. Methodology

1.8.1. Data collection

The data for this study were collected during three periods of fieldwork between January 2000 and May 2004 of in total nine months. During the fieldwork, I stayed in Adamorobe and in the neighbouring village of Amanhyia. A total of roughly 40 hours of signing was videotaped, featuring most of the adult deaf signers as well as some deaf children of Adamorobe. However, most material was collected with the help of the late Mr. Kofi Adin, an excellent signer and GSL-AdaSL interpreter of the weekly church service in Adamorobe. The two other main consultants are Ms. Ama Korkor and the late Ms. Abenaa Mumu. Other people who have contributed to the data collection are Ms.Agnes Bomo (hearing), her brother Mr. Kwadzo Tua (deaf) and her mother Afua Tatyifu (deaf), Ms. Ama Korkor's brother Mr. Kofi Pare (deaf), the deaf siblings Mr. Bosmoprah Kwadzo, Mr. Kwame Ofori, Ms. Afua Okumbia (Kaya), Mr. Kwasi Boahene and Mr. Kofi Kwakwa and two of their hearing sisters.

Further contributions to the data were made by the following deaf people; Mr. Kofi Tuo, Mr. Diodu Kwasi, Mr. Kwadzo Ayse from Aburi, Ms. Apetere Korkor, Ms. Awurabia, her daughter Ms. Apetere Korkor and her son Mr. Kwame Afere, Ms. Adwoa Agyiriwa, and Ms. Esabia. Ms. Ama, Ms. Adwoa Amua, Ms. Afua Ofusua, Ms. Dompo Akosua, Mr. Kwabena Ofori (brother of Ms. Awurabia) and Mr. Kwasi Pare, in addition to a list of hearing people too long to mention here, also contributed to the present study by signing in my presence and thus allowing direct observations.

The children whose signing was filmed include the two daughters of the late Mr. Kofi Adin, Afua Kumu (9) and Adwoa Tunyabea (11), the

daughters of Ms. Dompo Akosua, Abena Awusua (13) and Adwoa Agyiriwa (11), Naomi Kwakyebia (9), Akua (5), daughter of Ms. Apetere Korkor, and Abenaa, the youngest, hearing daughter of Ama Korkor (13).

The first months of fieldwork were reserved for AdaSL classes by Kofi Adin and Akan classes at the University of Ghana, Legon. After a few weeks, all communication with the deaf inhabitants of Adamorobe was in AdaSL and sessions with consultants were conducted directly by me in AdaSL. The services of the bilingual Akan-AdaSL interpreter initially appointed to me were rarely used as AdaSL was our best shared language. During the second sojourn in the field, another hearing assistant with a native command of AdaSL and Akan and a sufficient command of English was found in the person of James, brother of the late Abenaa. Almost inevitably, having a good command of English seems to exclude a native command of AdaSL as the former implies that the person received a considerable part of his/her education outside of the village, affecting a person's acquisition and maintenance of AdaSL.

1.8.2. Types of data

Three types of data were collected; spontaneous texts, cartoon retellings, and single signs. The majority of the data (about 30 hours) consist of spontaneous, mostly monologue signing of personal narratives, mythical stories, bible stories as well as a number of church services in GSL simultaneously interpreted into AdaSL.

For the analysis of motion events presented in Chapter 5, semi-spontaneous material was elicited with the help of four Tweety and Sylvester cartoon fragments.[12] The cartoons were chosen because of their suitability to generate descriptions of motion events. Earlier attempts to elicit data through the use of still pictures from the picture book "Frog, where are you?" (Mayer, 1969) met with interpretative problems of the adult signers. Using moving images eased the problem a little, but not sufficiently. A partial solution was found in asking educated young teenagers (Afua Kumu, Adwoa Tunyabea, Abenaa Awusua, Adwoa Agyiriwa, Naomi Kwakyebia) instead of adults to perform the task. The schoolchildren were more accustomed to Western images. A drawback to the change of the set up was that these children spend most of their time at a boarding school were another sign language, GSL, is used and they felt uncomfortable using AdaSL with each other. This problem was solved by asking them to sign to adult inhabitants of Adamorobe. Under this condition, the teenagers switched to AdaSL. The

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[12] The fragments used for elicitation are 'bowling ball', 'catapult', 'drainpipe', and 'swing' as created in a ready-use format by Sotaro Kita at the Max Planck Institute for Psycholinguistics, Nijmegen.

children's preference for GSL in peer communication paints a dark picture for the future of AdaSL. Four children (ages 9, 11, 11 & 13) gave a description of the four cartoons in AdaSL. In addition to the retellings of the cartoon in AdaSL, three fluent hearing signers provided retellings in the naturally developed code-blend of AdaSL signs with spoken Akan.

Thirdly, for the analysis of the sign language at the sign level as presented in Chapter 2, I collected single signs in citation form. Single signs were collected in sessions with one or two deaf signers, the author and the bilingual research assistant. The signers who contributed single signs were the late Mr. Kofi Adin, the late Ms. Abenaa Mumu, Ms. Ama Korkor, Ms. Afua Kaya, Mr. Kwasi Boahene, and Mr. Kofi Pare. It was our aim to collect as many single signs in citation form as possible. To this end, several collection methods were used. Firstly, signers were presented with a GSL form, which they were asked to give an AdaSL equivalent for. Secondly, signers were encouraged to think of lexical items in a given semantic field presented by the researcher, such as food, colours, animals, etc. However, using these two methods of elicitation, only a limited group of signs was elicited. To expand the collection of single signs, the bilingual assistant was asked to contribute single signs. The same procedure was followed, except that concepts were presented in English or Akan, rather than GSL. To minimize the potential influence of Akan in the form of mouthings, a deaf signer was asked to repeat any sign made by the bilingual informant. As the number of signs collected was still restricted, a further method was used. Signs were cut out of running text on video and presented to deaf signers to repeat in isolation. Though in a few cases the signer could not correctly identify the sign cut out of context, this method also yielded a considerable number of signs. In case of such a misinterpretation, the deaf signer in some cases would produce another, correct AdaSL sign, which was consequently included in the collection.

The task of signing single signs caused some problems and tended to yield single phrases, rather than single signs. For instance, the instruction of the researcher and the bilingual consultant to sign ONE ONE, intended to mean 'one by one', was interpreted either as an instruction to insert the sign ONE after every sign, or as a demand to sign slowly, as *baakɔ̃ baakɔ̃* (lit. 'one one') in Akan means 'slowly' in some contexts. In some cases, we were unable to clarify the assignment. With the methods described above, basically three types of data were collected; single signs in citation, compounds or descriptions of single concepts, and phrases. Only single signs were used for the formal analysis in Chapter 2. The encoding of the single signs is treated in §1.8.3.2. The collection of 397 monomorphemic signs,

resulting from the encoding criteria, is at the basis of the analysis in Chapter 2.

1.8.3. Transcription and encoding

1.8.3.1. Transcription of spontaneous texts and cartoon retellings

The initial aim to transcribe the spontaneous data and the cartoon retellings in a SignStream database (Neidle, 2001) during the fieldwork was not feasible due to the lack of electricity and difficulty in finding an assistant with a sufficient command of English. Postponing the transcription to after the fieldwork, I invested considerable time into acquiring a good command of AdaSL. For the purpose of cross-checking my intuitions during transcription outside of the field, a free translation in Akan and English was made of all of the recorded material. In the absence of a translator with a good command of AdaSL and sufficient literacy in Akan and English, a team of three persons worked on these translations. Mr. James Abesuah would give an oral translation in Akan of the recorded AdaSL material. Mr. Joe Anakwa would write down this oral Akan translation. Finally, the written Akan translation would then be translated into English by a third person, Mr. Michael Kumi. This long chain of interpretations was prone to mistakes, but inevitable given the circumstances. An extreme example of misinterpretation on misinterpretation was when a signer signed high-heeled shoes (WALK-ON-LONG-THIN-ENTITIES), which looks very much like the sign for ANTILOPE ('that have long, thin legs') and was translated by the first interpreter as *adowa*, meaning 'antilope (species)' in Akan. This Akan word was misread by the Akan-English interpreter as 'odowa', Akan for 'bee', and translated as such. However, having invested considerably in learning AdaSL, I was able to trace such mistranslations.

All the cartoon retellings in AdaSL and the blended form of AdaSL and Akan were transcribed in SignStream (Neidle, 2001). Of the large collection of spontaneous texts (around 30 hours), only a small part could be transcribed due to time restrictions. The amount of transcribed and non-transcribed material used varied according to the topic and will be indicated in each chapter.

For the analysis of the expression of motion in Chapter 5, a means of determining clause boundaries was needed. Such boundaries are often hard to detect in spontaneous, running texts. To identify meaning and function of the non-manual elements requires an extensive study, going beyond the scope of the present study. However, two types of boundary marking were found: the manual sign FINISH, and the re-establishing of eye contact with the interlocutor, often accompanied by a head nod. The nature of the domains marked in this way is an issue for further research. For the

expressions of motion analysed in Chapter 5 it was checked whether or not they were separated by FINISH, a re-established eye contact or a head nod. If they were not overtly marked by such a boundary marker, they were considered to form part of a single clause.

1.8.3.2. Encoding of single signs

The purpose of collecting a large set of different lexical items was to code and describe selected aspects of their form using SignPhon (Crasborn, van der Kooij & van der Hulst, 2001). Only single signs were entered into the SignPhon database. Compounds or descriptions for a single concept were separated into meaningful parts, which were then coded. Highly merged compounds were treated as 'monomorphemic' or single signs. Adding the compound parts to the 'monomorphemic' signs resulted in a collection of 397 signs. This collection of 397 monomorphemic signs is the basis for the analysis in Chapter 2. The signs were coded for the following aspects:

1. English gloss
2. Akan gloss
3. Signer
4. Semantic field (e.g. food, animal, religion, etc.)
5. Morphology
6. Handshape of the strong hand
7. Handshape of the weak hand
8. Handshape change
9. Sign type (one handed, balanced, or unbalanced)
10. Type of iconic motivation (entity depiction, outline depiction or pointing)
11. Location type

The English and Akan glosses were determined partly in collaboration with the bilingual research assistant and partly with the aid of an English-Akan dictionary (Christaller, 1933). The signs were all coded for semantic field. For a considerable number of signs, this was problematic as their meaning was so broad that it would encompass several semantic fields, as in the case of ELDER, which can be used to mean CHIEF, ADULT, ELDER and MONDAY (see §3.3). Due to this ambiguity, the codes for semantic fields were not quantified, nor analysed. Under point 5 'morphology', signs were marked for being a sequential, manual compound or not. Other forms of morphology were found on a large number of signs, such as meaningful orientations, repeated movements, addition of an alternating hand, etcetera, but these are not considered here. Combinations of a manual sign and a mouthing or meaningful mouth gestures were not considered compounds.

Such combinations involving colour mouthings are treated in §3.2.
Combinations involving size and shape mouthings are treated in §4.3.5.

1.8.4. Theoretical background, type of grammar and content

This thesis aims at giving a broadly accessible description of the Adamorobe
Sign Language. The descriptive chapters are therefore data-driven rather
than embedded in a specific framework. The data used are naturalistic,
spontaneous and semi-spontaneous data. Some aspects of theoretical
frameworks are used in an eclectic way, when they appear to adequately
account for phenomena found in the data, and not the other way around.
Contrary to elicited data, one can expect spontaneous data to give a realistic
impression of the frequency and use of certain constructions. Acquisition of
an active command of the language under study, indispensable for
interaction with my informants, proved a valuable heuristic device. In
addition to a description, this book provides an analysis of the influence of
the social setting on the form of AdaSL.

1.9.   Glosses, translation, abbreviations and symbols

1.9.1. Glosses and typographical conventions

For the sake of internal consistency and comparability, each morpheme is
rendered by one and the same morpheme throughout the thesis as much as
possible. Glosses are merely labels, not based on the interpretation of a sign
in a specific context, but rather based on a core meaning from which (most)
possible interpretations can be derived. Due to the broad range of meanings
of some signs, this principle obscures the relation between the glosses and
the translation in some cases. Where needed, footnotes are added to facilitate
the interpretation of the glosses. Although for most signs it is easier to find
an Akan gloss, matching more closely the semantics of the sign, signs are
glossed in English to enhance the transparency of the book for readers who
have no command of Akan.
In the representation of glosses and translations, the following conventions
apply:
- Glosses of signs are in small caps, e.g. ADAMOROBE.
- Words of glosses consisting of more than one word are separated by
  a hyphen, e.g. SEWING-MACHINE.
- In glossing signs or words expressing more than one concept in a
  single form, the glosses for these concepts are separated by a colon,
  as in BLACK:INTENSE.

- Where two or more signs are (near) synonyms, the same gloss is assigned to the signs, whereby a number is added to identify each sign, e.g. FOOTBALL-1 and FOOTBALL-2.
- Akan words are printed in italics, e.g. *baakõ baakõ*.
- Translations of a sign or a string of signs are rendered between single quotes. Where information from the linguistic or situational context is needed for a correct interpretation, this information is added to the translation between brackets, e.g. '(The child) refuses'.
- Glosses for 'measure stick' signs, as discussed in §4.3.4, consist of the abbreviation MS: followed by the relevant part of the hand or arm, e.g. MS:thumbtip.
- Compound signs are represented by one or more English words for each compound part, separated by a plus, e.g. SLEEP+HOUSE.
- Single signs selected out of longer strings of signs representing one concept (see Chapter 2), are represented together with the meaning of the complete string, whereby the former follows the latter, separated by a hash (#), e.g. DOG#PANTING.
- Descriptions of gestured or mimed forms are rendered in normal font between V-shaped brackets, e.g. <surprise>.
- Productive classifier forms are rendered between square brackets, e.g. [closed-B-touches-neck]
- Mouthings are represented between square brackets and superimposed on the gloss they co-occur with, e.g.

    [wɔ]
    INDEX
- Inflections for person on signs are represented by numbers in subscript, directly adjacent to the gloss for the sign.

In the thesis, the following sign languages are referred to by their acronyms; Adamorobe Sign Language (AdaSL), Sign Language of the Netherlands (NGT, abbreviated from Nederlandse Gebarentaal), and American Sign Language (ASL). All other sign languages are referred to by their full names.

1.10.   Outline of the book

In the next four chapters, Chapters 2, 3, and 4, aspects of AdaSL are described. Chapter 2 analyses aspects at the sublexical level, such as phonological parameters, size of signing space, multichanneledness, and phonetic characteristics. In Chapter 3, the AdaSL terminology for the semantic fields of colour, kinship, counting, time and personal name signs is

described. In Chapter 4, different systems expressing size and shape are discussed. In Chapter 5, the expression of motion in AdaSL is described, including verb series and generic motion markers. In each chapter, the findings are compared to what is found for other sign languages. Chapter 6 discusses the results in relation to a hypothetical influence of the social setting on the current shape of AdaSL.

2. PHONOLOGY

2.1. The phonology of sign languages

Sign phonology deals with the sub-lexical level of signs. Following Stokoe (1960), most researchers on sign languages consider the handshape, orientation, movement, and location of the hands as the building blocks of signs, the so-called 'parameters'; some also take non-manual elements into account. It is beyond the scope of this thesis to discuss all the issues in sign phonology in detail but those points relevant to the analysis of AdaSL signs will be mentioned here.

Different researchers provide different descriptions of these parameters (for an overview of phonological models, see Sandler & Lillo-Martin (2006). The handshape parameter is usually described as being internally structured on the basis of selected fingers (these are active and often extended) and unselected fingers (Mandel, 1981). Signs may have a dynamic handshape or handshape change. In such signs, the position of the fingers may change, but the selected fingers remain the same. Sign languages differ in the types of handshape changes used (cf. Nyst, 1999). The orientation of the hand can be described in absolute terms, such as 'palm up' or in relative terms, as a function of the location of the hand and the part of the hand that is orientated towards the location, as proposed by Crasborn & van der Kooij (1997). Phonological models for sign languages vary considerably in the number of distinctive features they involve. This depends in part on whether or not iconic elements are seen as phonemic. Van der Kooij (2002), for example, explicitly separates both iconically and phonetically motivated forms from their underlying phonological specification, proposing a set of 31 phonemic handshapes for NGT.

Most studies in sign phonology have been done on ASL and far fewer on other sign languages. The latter are also mostly on sign languages of large communities of Deaf signers. Little is known about the building blocks of signs in other types of sign languages, like home, rural and emerging sign languages and communities with a high incidence of deafness (see §1.7). Usually, descriptions are given in impressionistic terms, lacking quantification. However, in the available descriptions of these three types of sign languages the following characteristics recur when they are contrasted with large sign languages.

- Relatively **few handshapes,** which are also **unmarked.** For example, Washabaugh (1986) describes 10 handshapes for PISL contrasting with 17 handshapes he proposes for ASL, but see also

Kendon, 1980a for a rural/home sign language in Enga, Papua New Guinea.

- Relatively **large proliferation of locations**, including ones below the waist or behind the body. These are regions not commonly used in sign languages of large Deaf communities (Kendon, 1980a for Enga sign language).
- A **large signing space.** This is partly related to the usage of locations below the waist and behind the body (Kegl, Senghas and Coppola, 1999:183,196 for Nicaraguan Sign Language; Kendon, 1980a for Enga Sign Language in Papua New Guinea; and Ferreiro-Brito, 1984 for Urubú-Kaapor Sign Language).
- A high degree of **iconicity** (Dolman, 1986 for Country Sign Language in Jamaica; Ferreiro-Brito, 1984 for Urubú-Kaapor Sign Language).
- Extensive use of **multi-channelledness** or **non-manual elements**. Providence Island Sign Language has "a significant non-manual component" in 36.5% of its lexical signs, against 1.9% for ASL (Washabaugh, 1986:56). The use of whole body signs can be interpreted as a form of multi-channelledness as well. Kegl et al. (1999:196) find that earlier varieties of Nicaraguan Sign Language use whole body signs more than later varieties. A relatively extensive use of multi-channelledness is also reported by Dolman, 1986 for Country Sign Language in Jamaica.

The characteristics of smaller sign languages correspond to some extent to features of older varieties of ASL as compared to contemporary varieties of that language. Frishberg (1975) describes the following tendencies in the historical development of ASL phonology:

- Signs made on or at the face shift to its periphery in order not to block the visual perception of the face.
- Two-handed signs become one-handed when they are articulated on the head.
- Signs made below the head tend to shift their location towards the centre of the signing space. ASL formerly used locations that were more widely dispersed, and thus a larger signing space. In this respect, earlier varieties of ASL resembled home sign more than present varieties (see property 2 in list above).
- Symmetry develops in two-handed signs on the body and in space.
- Concentration of lexical information is on the hands. This happens at the cost of non-manual elements. This reduction of multi-channelledness suggests that ASL formerly was more like home and rural sign languages (see property 5 in the list above) Although not mentioned as such by Frishberg, a concentration of lexical

information on the hands may increase the number (and markedness) of distinctive handshapes (cf. Boyes-Braem, 1981:77).[13] The more distinctions are made on the hand, the more distinctive and marked handshapes are needed. This point links up with the characteristic of few unmarked handshapes in other sign languages (property. 1 in the list above).

- Compound signs simplify through assimilation and reduction processes.
- In general, the changes found lead to decreasing iconicity of lexical items. In this respect, again, earlier varieties of ASL resemble the reports on home sign and other sign languages (see property 4 in the list above).

The accounts of home, rural and emerging sign languages in terms relative to accounts of large sign languages, together with the comparison of older and newer (varieties of) sign languages are informative with respect to the variation in phonology that may correlate with particular types and varieties of sign languages. Thus, Nicaraguan Sign Language is known to have its origin in a collection of home sign languages. *Mimicas*, the cover term for the earliest variety of Nicaraguan Sign Language, is described as having the same phonological features as other home sign languages. Similarly, it seems that the historical forms of ASL studied by Frishberg were more like home and rural sign languages than the contemporary forms of ASL. Aronoff, Meir, Padden & Sandler (2003) compare ASL -an older sign language with a large community of users- with Israeli Sign Language -a younger sign language with a smaller community of users- and find that there are more reference projections or whole body signs -and thus more multi-channelledness- in the younger sign language.

        In the present chapter, a description of AdaSL phonology, with a focus on handshape will be given. To allow detailed cross-linguistic comparison, I will use the descriptive model proposed by Van der Kooij (2002), which is a recent attempt at a comprehensive phonological description of NGT. The model is introduced in §2.5. As for sign languages of large Deaf communities, the data for AdaSL will be compared with NGT, unless indicated otherwise. The findings for AdaSL will also be compared with respect to the characteristic features described for home, rural and emerging sign languages above.

        In the next section, §2.2, the methodology of the phonological study on AdaSL is described. In §2.3, articulators other than the hands are discussed. In §2.4, I present the phonetic handshapes found in AdaSL as well

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[13] A related hypothesis is proposed by Boyes-Braem (1981:77) who expects that fine distinctions in iconically related handshapes, distinctive in ASL, occur as free variants or allophones in sign languages with smaller vocabularies.

as their frequencies in different contexts, i.e. in dominant and non-dominant hands and in different sign types and location types. Handshape changes are treated in the same section. In §2.5, the distinctivity of the phonetic handshapes is explored. In §2.6, the iconic motivation of AdaSL handshapes is discussed, followed by the conclusion in §2.7. Table 2.3 provides an illustration of the handshapes referred to in this chapter. Throughout this chapter, names for phonemic handshapes are preceded and followed by a slash, e.g. /O/ hand, whereas phonetic handshapes are not marked in any way, e.g. O hand.

2.2.   Methodology

The phonological study had three stages; the data collection, the encoding of the phonetic forms in a database, and the identification of phonemic handshapes.

Data were collected separately by the author and the research assistant who was bilingual in Akan and AdaSL (see §1.8.2). The total number of signers contributing was eight. Our initial intention was to collect single signs, but this turned out to be difficult. Generally, the signers offered a single concept, signed in AdaSL, or a single phrase. In both cases, this often resulted in a series of signs, rather than in a single sign. Signs were elicited in the following ways:

1. Signers were asked to give the AdaSL equivalent of a GSL sign.
2. Signers were given a general semantic field, such as food, or animals and asked to think of signs within that field.
3. To increase the number of signs in the collection, two additional methods were used:
4. Signs were cut out of stretches of AdaSL signing on video and presented to signers to repeat in isolation.
5. Spoken Akan or English words were presented to the bilingual research assistant who in turn would present the concept in AdaSL or Akan, but usually both, to the deaf signer who was expected to reproduce his or her own usage of the sign.

Not included in the collection of single signs were the initialised personal name signs based on the GSL system and other GSL signs. GSL signs were identified as such by the consultants. In total, 408 movie fragments were collected, containing one or more signs. A considerable number of these fragments, 115 in total, contained sequential compounds or descriptions. Where possible, the individual morphemes of the sequential compounds were separated and coded as single signs in the cases where they were known to occur as free or unbound morphemes. In this chapter, such single signs drawn from compounds are represented by the gloss of the compound, followed by the gloss of the single sign or compound part, e.g. the

compound sign DOG consists of the two compound parts DOG#ANIMAL and DOG#PANTING. Highly merged compounds were not separated, but treated as single signs. Single signs often occurred more than once across the movie fragments. Selecting only one incidence for each single sign, a total of 365 signs was coded for the following aspects:

1. Akan gloss
2. English gloss
3. Signer
4. Semantic field (e.g. food, animal, religion, etc.)
5. Compound (yes/no)
6. Handshape of the dominant hand
7. Handshape of the non-dominant hand
8. Handshape change (yes/no and handshapes involved)
9. Sign type (one handed, two-handed balanced or unbalanced)
10. Type of iconic motivation (entity depiction, outline depiction or pointing)
11. Location type (head, body, arm, leg, space)

The English and Akan glosses were determined partly in collaboration with the bilingual research assistant and partly with the aid of dictionaries (Christaller, 1933; Akrofi, Botchey & Takyi, 1996). The signs were coded in an Excel spread sheet, using SignPhon codes for semantic field, handshape change, sign type, and location type (Crasborn, van der Hulst & van der Kooij, 2001).

For a considerable number of signs, the coding for semantic field was problematic. The meaning of many signs tended to be so broad that they would fall into several semantic fields. For example, the sign ELDER can be used to mean CHIEF, ADULT, ELDER, ADULT, and MONDAY (see §3.3). Due to this ambiguity, the codes for semantic fields were not quantified, nor analysed.

They database thus consists of single signs recorded in the field for this purpose. The phonological analysis as described below in some cases generated generalizations that were substantiated or nuanced by AdaSL signs found in other contexts, such as recordings of discourse and my own knowledge of AdaSL. Wherever single signs outside of the database were taken into account, this is mentioned explicitly. I decided not to include them in the database, as including signs on the basis of the phonological features would interfere with the frequencies of these features in other parts of the analysis.

The handshapes of the dominant hand and non-dominant hand were coded with the aid of the HamNoSys table of handshapes (Prillwitz, Leven, Zienert, Hanke, Henning et al., 1989). This table consists of a large number of drawn handshapes. However the handshapes included in this table are

mainly quite tense in their articulation compared to the handshapes found in AdaSL. Photographs of the more lax AdaSL varieties were therefore added as coding targets (see Table 2.3).

Having encoded the handshapes of the 365 signs as described above, their distinctivity was determined in two steps. Firstly, a list of potentially distinctive handshapes was distilled from the encoded handshapes. This was done by grouping identical handshapes, as well as handshapes containing only a very slight variation, but with a high degree of perceptual similarity. Furthermore, handshapes varying exclusively in the position of the base joints were collapsed into one phonetic handshape, as flexion of the metacarpophalangeal or base joints, joining the fingers to the hand, was found to be non-distinctive or iconically motivated in all cases (see §2.5). This resulted in a set of 29 phonetic handshapes.

2.3.   Articulators other than the hands

A considerable number of AdaSL signs are found to be articulated by body parts other than the hands, either alone or in unison with manual articulation. These are (parts of) the head, including articulations of the face and the mouth (§2.3.1), the leg (§2.3.2), and the arm (§2.3.3).

2.3.1. The head and the face

In sign languages with and without large Deaf communities, parts of the head as well as the head as a whole may participate in the articulation of a sign. The mouth can be active in signs in two ways: on the one hand in the form of mouthings, based on words in a spoken language, on the other hand in the form of mouth gestures that are by definition not based on spoken words (Boyes-Braem & Sutton-Spence, 2001).
In AdaSL, the head as a whole or parts of it, such as the face or the mouth, may be active in a sign. The head as a whole makes a nodding movement simultaneously with a repeated extension of the base joint of the index finger in only one sign in the database, in LIZARD.

Mouth gestures appear to occur frequently and often are quite subtle. Unfortunately, quantifying the frequency of mouth gestures was not feasible in the time-frame of this thesis, partly because their use varied considerably in and between signers. Examples of mouth gestures are given in Table 2.1.

Sign	Mouth gesture
GRASSCUTTER	closed teeth, withdrawn lips
WATER	open, protruded lips (mimicking drinking from the hand)
WIND	[f:], mimicking blowing
CAR	loose lip trill
SNAIL	tip of tongue slides out of closed lips
BAT#FLY-LIKE-A-BAT	pursed lips
GONG-GONG	[pa]-rep
GUN	[po]-rep
CHIEF	[pim]
DAY-BEFORE-YESTERDAY	withdrawn lips

Table 2.1 Examples of mouth gestures in AdaSL

Mouth gestures in AdaSL include mouth movements required by articulatory properties of the sign, such as the opening of the lips and the closing of the teeth, to enable the teeth to serve as a location in GRASSCUTTER. In other mouth gestures, the mouth mimics non-linguistic functions of the mouth like blowing, biting and sucking, e.g. drinking action in WATER. In other signs, the mouth gesture seems to convey meaning aspects of motion as in CAR, SNAIL and BAT#FLY-LIKE-A-BAT or of sounds, as in GONG-GONG or GUN. In some signs, the motivation of the mouth gesture is not clear, e.g. CHIEF, DAY-BEFORE-YESTERDAY. Though the mouth gestures are subject to variation, in some signs the presence of a mouth gesture is meaningful or distinctive. The sign DEAF in the database consists of a 1 hand[14] on the cheek accompanied by a tense lip trill. The manual sign is a reduced form of the sign for HEARING and the tense lip trill is the only trace of the affix NOT-THERE. The signs SNAIL and VEHICLE, since they both are articulated with an S hand low in neutral signing space with the same orientation, form a minimal pair distinguished only by mouth gesture. SNAIL has a visible tongue tip and CAR has a lax lip trill. Other signs found with a lax lip trill are MILL and AIRPLANE, suggesting that a lax lip trill may be associated with the concept of machinery. The presence of a lax lip trill distinguishes AIRPLANE from BIRD, which otherwise form a minimal pair, both tracing a path through the air with a 1 hand.

Mouth gestures are sometimes part of a more complex facial expression, such as the pursed lips accompanying a wrinkled nose in BAD-SMELL. In the database, two signs consisting exclusively of a mouth gesture were found. These are DOG#PANTING and PALMWINE#BLOW, whereby the mouth mimics panting and blowing respectively.

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[14] For a list of phonetic handshapes in AdaSL, see Table 2.3.

Mouthings occur in 15% of the signs in the database. The bilingual assistant judged 55 signs out of 365 as containing a mouthing, including the examples in Table 2.2. In the table the Akan word from which the mouthing is derived is also given.

Sign	Mouthing	Akan[15]	English[16]
WOMAN-2	[fu]	*nufunufu*	'breast'
WICKED#HEAD	[spread lips]	*ti*	'head'
FUFU (as in FUFU-1)	[fff]	*fufu*	[stiff porridge]
TOMATO	[amo]	*amo*	'tomato'
CUT-IN-LEG	[twa]	*twa*	'cut'
HAMMER/CRACK STONE	[obo]-rep	ɔbɔ	'stone'
IT IS NOTHING	[spread lips]	*ɛnyɛ hwee*	'it is nothing'
IT IS GOOD	[ɛyɛ]	*ɛyɛ*	'it is good'
UNDERSTOOD	[wate]	*wate*	'you have heard/understood'
WEDNESDAY	[wuda]	*wukuda*	'wednesday'
TUESDAY	[bnada]	*benada*	'tuesday'
WHITE	[ftft]	*fita*	'white'
OLD	[ftft]	*fita*	'white'

Table 2.2 Examples of mouthings in AdaSL

The source spoken language of the mouthings is usually Akan, the dominant spoken language of the community. A few signs are found with mouthings derived from English, for example the signs for TWO, FIVE, SIX, and BOOK. They are probably borrowed from or through GSL where mouthings are usually from English. One sign was found with a mouthing borrowed from Gã, a neighbouring Kwa language (see §1.2), that is the sign BIG, accompanied by the mouthing [abo] derived from 'agbo', the word for 'big' in Gã.

The semantic content of the AdaSL manual sign in most cases matches the semantic content of the source word in Akan on which the mouthing is based. Thus, the sign WEDNESDAY has the mouthing [wuda] from wukuda 'Wednesday' in Akan. In other signs the mouthing is based on a word with a meaning that is not fully matching the meaning of the manual sign. For example, WOMAN-2 is found with the mouthing [fu], which is based on the Akan word for 'breast'. In some signs, mouthings have a modifying or specifying function, as in the case of OLD. This sign consists of a B hand striking the hair accompanied by the mouthing for 'white'. The combination 'hair' and 'white' is used to mean 'old (of a person)'. Manual

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[15] Akan word from which the mouthing is derived.
[16] English translation of the Akan word.

signs with modifying mouthings are frequent in the semantic domains of colour as well as size and shape. Such combinations are treated in detail in §3.2.4 for colour and in §4.3.5 for size and shape.

In summary, though the use of mouthings and mouth gestures is subject to variation, some mouthings and mouth gestures are conventionalized and distinctive in the lexicon.

2.3.2. The leg

The leg is active in 9 signs (3%) in the database. The leg is the sole articulator in one sign, FOOTBALL-2. In 5 other signs, the legs co-articulate with the hands, namely in FOOTBALL-1, INSULT-2, WALK-1, WALK-2, and WALK-3.

The leg activity is clearly phonetic in signs located on the leg, as in those cases in which the leg has to be pulled up for the hand to be able to reach its location, e.g. in SLIPPERS, SHOES-1, BOOTS or in the name sign NKOFI (not included in the database). The latter sign consists of an S hand contacting the knee, referring to a characteristic feature of the legs of that person. In the sign language literature, the leg as an articulator has not generally been described as occurring in sign languages of large Deaf communities. The fact that articulators other than the hands are used in AdaSL is in line with the reported higher frequency of multi-channelledness in sign languages with no large Deaf communities as discussed in §2.1.

2.3.3. The arm

In at least 6 signs (2%) in the database, the active articulator is larger than the hand and includes (part of) the arm. In REFUSE the elbows move towards the body hitting the sides. In FUNERAL#DANCE, SHOW-OFF, and EWE, the arms represent gesturing or dancing arms. Probably, this is the case in more signs in which the hands and arms represent hands and arms or arms holding an object, e.g. in ABURI/ADAMOROBE. In PERSON (HEIGHT-OF), SHORT, and BOTTLE (not in the database) the lower arm is oriented upwards and forms a meaningful unit together with the hand. This seems to be the case in BABY as well.

The arm acting as an articulator is also found in sign languages of large Deaf communities, e.g. in TREE in ASL, or SCOTLAND in BSL. The use of the whole arm seems to reflect the higher frequency of multi-channelled signs and whole body signs in sign languages without a large Deaf community as discussed above in §2.1.

2.3.4. Summary

AdaSL makes use of non-manual articulation in the form of mouth gestures, mouthings, and movement of the head, legs, and arms. The use of mouth gestures is not quantified, but seems to be high. The mouth gesture 'lax lip trill' is associated with machinery, as in MILL, VEHICLE, and AIRPLANE. Mouthings drawn from three spoken languages have been found; i.e. from Akan, English and Gã. Mouthings occur in 15% of the signs. The head is the main articulator in LIZARD-1, the leg is the main articulator in FOOTBALL-1 and the arm in REFUSE. The leg is not used as an articulator in lexical items in NGT. In general multi-channelledness seems to be higher in AdaSL and this finding would fit with the characteristics of sign languages with small communities outlined in §2.1

2.4.   The phonetic handshapes

Although a considerable proportion of AdaSL signs has non-manual (co-) articulation, most signs have a main manual component. As mentioned in §2.2, the phonemic AdaSL handshapes were abstracted from phonetic handshapes. The handshape data in the current section are all based on the phonetic handshapes. The phonemic handshapes are discussed in section §2.5. In §2.4.1, an overview of all phonetic handshapes found in the AdaSL database is given. In §2.4.2, the occurrence of phonetic handshapes in the dominant hand is described while §2.4.3 deals with the occurrence of phonetic handshapes in the non-dominant hand. In §2.4.4, the types and frequency of handshape change in AdaSL are described. In §2.4.5, the correlation between phonetic handshapes and location types is described and in §2.4.6, the correlation between phonetic handshapes and sign types. In §2.4.7 I summarise the findings on phonetic handshapes. In the tables in this and the following sections, frequency percentages are only presented when they are 2% or higher, with the exception of Table 2.4 and Table 2.5.

2.4.1. All phonetic handshapes

Table 2.3 gives an overview of the phonetic handshapes found in dominant hand in the 365 coded AdaSL signs. They are presented and organized according to the finger selection and position, whereby the thumb is considered a finger as well. In this table, handshapes are presented in the form of stills, taken from the moving image of an AdaSL sign. Where it was not possible to capture a representative still from the AdaSL video material, a picture was taken of the handshape in isolation.[17]

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[17] I thank Mustapha Drammeh for being a hand model.

Index finger selected

1	X

Index finger selected + thumb opposition

Closed 1	Open 1	bO	bO-tip	Closed bB"

Thumb selected

A	MS: thumbtip

Index and/ or middle finger selected

H	V	K	Open 8

All fingers selected and adducted

B	Lax B	B^	B"

All fingers selected and spread

5	5"	B fan

B^fan	Open B +spr	Lax open B+spr

All fingers selected + thumb opposition

S	O	Lax O

Lax C	Closed B	Open B

Table 2.3. Phonetic handshapes in AdaSL

Table 2.3 does not include the handshapes in which the arm is an active part of the articulator. The following such signs were found in the database and were labelled as: S+arm, lower arm, elbow, and Lax O+elbow. In the case of S+arm and Lax O+elbow, the hand has an S and a Lax O handshape, respectively. In those signs in which the lower arm or the elbow are the active articulator, the handshape is entirely relaxed. The frequencies of these handshapes, as well as of entirely non-manual articulation, are included in Table 2.4 in the next section, augmenting the number of articulators in this table as compared to Table 2.3. The signs in which these large articulators occur have been discussed in §2.3 above.

2.4.2. Handshapes in the dominant hand

The dominant hand is the moving hand in one-handed signs and in unbalanced signs (see §2.4.3). The phonetic handshapes found in the dominant hand in the database are presented in Table 2.4 together with their frequency. Except the articulators that are strictly spoken non-manual, such as 'non-manual', 'elbow' and 'lower arm', these handshapes are illustrated in Table 2.3.

Handshape name	Absolute occurrence	Relative occurrence
1	70	19%
S	52	14%
B	48	13%
Lax B	44	12%
Lax O	15	4%
bO	14	4%
B"	12	3%
5	12	3%
5"	11	3%
openB+spr	9	3%
A	8	2%
X	8	2%
Closed bB"	8	2%
bO+tip	6	2%
Lax openB+spr	6	2%
V	6	2%
O	4	1%
Non-manual	3	1%
Lax C	3	1%
B^fan	3	1%

K	3	1%
S+arm	2	1%
Closed 1	2	1%
Closed B	2	1%
Lower arm	1	<1%
B-fan	1	<1%
B^	1	<1%
H	1	<1%
Elbow	1	<1%
Open 1	1	<1%
Open 8	1	<1%
Lax O+elbow	1	<1%
Open B	1	<1%
SAS-thumbtip	1	<1%
TOTAL	365	

Table 2.4. The relative frequency of phonetic handshapes as they occur in the dominant hand in AdaSL

In Table 2.4, only the final handshapes of the sign are represented. Three phonetic handshapes were found only as initial handshapes; K, 8, F. These three handshapes thus do not occur in signs without handshape change. Almost half of the signs (48%) are produced with one of the following four handshapes; 1, S, B, or Lax B. Two-thirds of the signs (68%) use a handshape with all fingers selected. One third (30%) of the signs uses a handshape with only one finger selected, which may be either the index, the middle finger, or the thumb. The distribution of handshapes in the dominant hand matches the findings for NGT in these respects (Van der Kooij, 2002:94-95). Unlike NGT, no handshapes with the little finger selected were found.

Van der Kooij (2002) compared the frequencies of 14 handshapes occurring in the dominant hand of four sign languages. These frequencies are compared to the data for the same 14 handshapes in AdaSL in Table 2.5. As Van der Kooij does not distinguish lax from tense realisations, the distinction between lax and tense realisations of the AdaSL handshapes has also been collapsed.

HS name	AdaSL	NGT	ASL	BSL	ISL
B	25	22	23	24	20
1	19	15	14	15	14
S	14	10	9	9	10
bO/closed bB"	6	5	?	3	8
(Lax) O	4	<1	4	2	6
5	3	13	7	7	8
A	2	4	3	5	3
V	2	3	4	3	4
X	2	1	4	?	1
F	<1 (only initial)	5	4	3	6
H	<1	1	4	4	4
(Lax) C	1	2	7	2	3
bC	0	1	<1	1	5
C+spr	0	3	?	4	?

Table 2.5. The frequency in percentages of handshapes in the dominant hand in AdaSL compared to four large sign languages (from Van der Kooij, 2002:93)

In AdaSL the B, 1, and S hand are the most frequent handshapes, in that order, just as in the other four sign languages. This supports Van der Kooij's (2002) claim that "the relative frequency of the most frequent handshapes of the dominant hand are highly similar in unrelated sign languages (2002:92)". At the bottom end of the frequency table there is more variation also between the large sign languages. Although a larger sample is needed to substantiate this observation, AdaSL seems to differ from the other four sign languages in the relative infrequency of the F hand, the C hand, and the H hand, and the absence of the bC and the C+spr hands. Except for the H hand, these are all round handshapes with an opposed thumb, a fact that will turn out to be of relevance for issues concerning iconicity to be discussed in §2.6.

2.4.3. Handshapes of the non-dominant hand

The non-dominant hand occurs in two-handed signs. Two types of two-handed signs are generally distinguished; symmetric or balanced signs and asymmetric or unbalanced signs (Stokoe, 1965; Van der Hulst, 1996). In balanced signs, both hands move and have the same handshape. In unbalanced signs, one hand moves and typically acts on the non-moving other hand. The non-moving hand is referred to here as the non-dominant hand in contrast to the dominant hand. Alternative terms are passive versus

active or weak versus strong hand. Battison (1978) formulated two conditions on the form of two-handed signs in ASL; Symmetry Condition and the Dominance Condition. The Symmetry Condition states that when both hands are moving, as in balanced signs, the handshapes are the same. The Dominance Condition states that in unbalanced signs, the non-dominant hand may have a handshape that is identical to the shape of the dominant hand or it may select a handshape from a limited set of unmarked handshapes, i.e. either A, S, B, C, 5, O, or 1. A similar restriction on the choice of handshape for dissimilar non-dominant hands is also attested in other sign languages, for example in NGT (Van der Kooij, 2002). In NGT, handshapes with all fingers selected are more common as non-dominant hands than as dominant hands. The dissimilar non-dominant hand has a B, S, or 5 handshape in 75% of the cases. Van der Kooij (2002) argues that the occurrence of dissimilar non-dominant hands is in most cases iconically motivated.

       In Table 2.6 the frequency of handshapes occurring in the non-dominant hand in AdaSL is presented along with an indication of their absolute frequency since their occurrence in the database was quite low. Only handshapes with a frequency of 2% or higher are presented.

Handshape name	Absolute frequency	Relative frequency
Lax B	35	20%
B	28	16%
S	28	16%
1	19	11%
Lax O	9	5%
A	8	5%
5	7	4%
Lax openB+spr	5	3%
B"	4	2%
Lax C	4	2%
Closed bB"	4	2%
5"	3	2%
BO	3	2%
Closed B	3	2%
Total	160 (out of 171)	94%

Table 2.6. The frequency of the (final) handshapes of the non-dominant hand in two-handed signs in AdaSL

The finger selection in the handshapes of the non-dominant hand is comparable in AdaSL and NGT. In AdaSL, 83% of the non-dominant handshapes show a selection of all fingers; in less than 17% we find the

index finger (and the thumb) as the only selected fingers. Similarly, in NGT less than 20% of the non-dominant hands have only one finger selected (Van der Kooij, 2002).

Of all 171 two-handed signs, 41 are unbalanced (see §2.4.6). Of these, 17 have two different handshapes. The frequency of these is given in Table 2.7. Because of the low absolute frequency, no relative frequency is presented in the table. All of the dissimilar handshapes in the non-dominant hand have all fingers selected. The phonetic B, Lax B, and B" hands account for 11 out of the 17 dissimilar handshapes in the non-dominant hand. These are phonetically similar, all being a type of B hand. This indicates that in unbalanced signs with two different handshapes, the non-dominant hand is restricted to unmarked handshapes, as formulated by Battison for ASL. An exception to Battison's Symmetry Condition is the sign FUFU. *Fufu* is a popular Ghanaian dish consisting of pounded yam or cassava. The sign has two moving hands, but their handshapes are dissimilar. Both the handshapes and their movements are iconically motivated in this sign, representing the pounding with the S hand and the turning of the yam with the Lax B hand. In only two or three out of the 17 AdaSL signs with a handshape on the non-dominant hand that is dissimilar to the dominant hand, no iconic motivation for the non-dominant handshape could be detected. These are the S hand in LONG-TIME, GSL/ASL (a borrowing from GSL) and arguably COUNT/EXPLAIN. This supports Van der Kooij's suggestion (2002) that the dissimilar handshapes of the non-dominant hand in unbalanced signs are often iconically motivated.

HS name	Absolute frequency	Signs
Lax B	6	BUY, FUFU, HOLIDAY, MONEY, PAWPAW, WATCH
B	4	GUN, GSL/ASL, BISCUIT, COUNT/EXPLAIN
A	2	COUNT, PEPPER
S	2	MAIZE, LONG-TIME
5"	1	GROW-1
B"	1	STIR
Closed B	1	BRACELET

Table 2.7. The distribution of non-dominant hand handshapes in unbalanced signs in which the non-dominant hand is dissimilar from the dominant hand.

2.4.4. Handshape change

In this section, an overview of the types and frequency of handshape change in the collection of AdaSL signs is given. Signs in the database were coded for handshape change when the final handshape was different from the initial handshape of the sign. Out of 365 single signs, 42 were coded as phonetically having a handshape change. The relative frequency of handshape changes is given in Table 2.8. In all but one case, the selected fingers (i.e. the active, usually extended fingers) remain constant, and the change can be described as an activity of the selected fingers, such as opening, closing, rubbing against each other, etc. Only in one sign, WATCH, does the handshape change involve handshapes with a different set of selected fingers, changing from B to V (see Table 2.8). Changes in the degree of aperture in the hand, i.e. the distance between the fingers and the thumb, account for the majority of handshape changes (52%). Hinging, i.e. flexion or extension of the base joints, accounts for 22% of the handshape changes. In 9 out of 10 signs, the hinging handshape change actually is a path movement that is executed by the base joints instead of or in addition to the wrist or elbow joint, e.g. in SWEEP or COME. In LIZARD the hinging movement of the index finger is iconically motivated, imitating the typical movement pattern of lizards.

The sign FAR is performed with a K hand and snapping release of the contact between the middle finger and the thumb. This snapping handshape change has not been attested in any other AdaSL sign.

The same K hand also occurs with another handshape change. The index of the K is held relaxed and the whole hand is moved downwards with a quick downward thrust, whereby the index hits the side of the middle finger. It occurs in the sign BEAT and, with an intensifying meaning, in the sign SWEET-2.[18]

Handshape change	Example sign	Absolute frequency	Relative frequency
Closing	MAIZE, CATCH	17	41%
Hinging	CRY, LIZARD	10	24%
Opening	SALT, STARS	7	17%
Rubbing	PLAMNUT, PEANUT	2	5%
Flick	BEAT, SWEET-2	2	5%

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[18] Outside the database the handshape change is found following the sign for HOT or SWEAT-ON-THE-FOREHEAD, also with an intensifying meaning. Both handshapes and handshape changes are also found with the same meaning in USL.

Adducting	SCISSORS	1	2%
Wiggling	SEWING-MACHINE-2	1	2%
Snap	FAR	1	2%
Selected fingers change (B>V)	WATCH	1	2%
N=		*42*	*100%*

Table 2.8. Handshape changes and their frequencies in AdaSL

2.4.5. Location types and the distribution of dominant hand handshapes

The frequency of a specific handshapes differs in relation to the type of location in NGT. Whereas 16 different handshapes are found to occur in neutral space, only 12-13 different handshapes occur on the body, the head, and the non-dominant hand (Van der Kooij, 2002). For example, handshapes with one finger selected, notably the 1 hand, were more frequent on the head than elsewhere. Van der Kooij (2002) suggests three explanations for this:

1. There are many iconically loaded 'landmarks' on the head
2. There is a perceptually motivated tendency not to block the face with a broad handshape and/or
3. There is a tendency for one-handed signs to have fewer than all fingers selected, and all signs on the head are one-handed.

To examine the distribution of handshapes across location types in AdaSL, 5 major location types are distinguished: space, head, non-dominant hand, body, and leg. Note that the location leg, which includes foot, is not used in the larger sign languages (see §2.3.2). Also note that two signs, the name sign KROBO[19] and the sign URINATE are performed at the crotch; both these signs, however, are not part of the database. Before turning to the distribution of handshapes, the frequencies of the location types are presented in Table 2.9. The majority of signs (98%) have one location; just 2% (n= 8) are performed in two location types: the head and space. All of these eight signs start at a head location and move to a space location. In some cases, the double location can be attributed to a compound origin, as in PETROL-1 (BAD-SMELL+POUR) and GO-TO-BED (SLEEP+LIE-DOWN). The sign CURSE is performed at a head location first and then on the non-dominant hand. Signs that involve two location types are counted twice in the frequency of location types in Table 2.9, which explains why the total number of locations is more than the total number of signs.

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[19] The sign KROBO denotes the ethnic group of Krobo and refers to the loincloth worn by Krobo girls during their initiation.

As can be seen from Table 2.9 more than half of the signs in the AdaSL database are performed in space. Only 2% are performed on the leg (n= 7); examples are INSULT-2, SUMMON#SUMMON, and TROUSERS. In addition, AdaSL makes use of locations behind the body, as for example in YOUNGER SIBLING, which is located on the back.

Location type	Absolute frequency	Relative frequency
Space	202	55%
Head	96	26%
Non-dominant hand	41	11%
Body	25	7%
Leg	7	2%
Total	371	101%

Table 2.9. The frequency of location types in AdaSL

As in the case of handshape, Van der Kooij (2002) finds considerable similarity in the frequency of location types across sign languages, in this case NGT, ASL, and Langue des Signes Française. Her findings on NGT and ASL, together with the frequency data from this current study on location types in AdaSL are presented in Table 2.10. AdaSL appears to pattern much like the two other sign languages in the table, except for its use of the leg as a location type. Although this is not apparent from the coding for location type in the database, AdaSL seems also to differ from NGT and other sign languages with respect to the conventional use of the crotch and the back as a location for lexical signs.

Location type	AdaSL	NGT	ASL
Space	55	71	43
Head	26	13	32
Non-dominant hand	11	7	15
Body	7	9	11
Leg	2	-	-

Table 2.10. The relative frequency of location types in AdaSL, NGT, and ASL in percentages.

As stated earlier, the location types appear to differ with respect to the number of different handshapes that occur at a specific location. Table 2.11 gives an overview of the distribution across locations of those handshapes occurring on average with a frequency of 2% or more. There are 16 such handshapes (see Table 2.4). As the number of signs using the leg as a location is very restricted (n=7), this location type is omitted from the table.

The neutral space is the location most frequently used – all 16 handshapes considered here were found in one or more of the signs articulated in neutral space. Moreover, 15 handshapes were found in signs articulated on the head, 14 different handshapes were found for the location non-dominant hand, and 10 different handshapes were found on body-related locations. Six different handshapes, all having all fingers selected, were found on the leg. The distribution across location types of the 16 most frequent handshapes in the AdaSL database is presented in Table 2.11.

Handshape name	% in all locations	% in neutral space	% on head	% on body	% on non-dominant
1	19	19	24	12	20
S	14	18	7	4	12
B	13	13	10	24	10
Lax B	12	13	13	12	7
Lax O	4	2	7	12	2
bO	4	2	5	4	10
B"	3	4	2	-	7
5	3	5	-	8	-
5"	3	2	3	-	12
openB+spr	3	5	2	-	2
A	2	3	2	4	2
X	2	2	4	4	-
Closed bB"	2	2	4	-	2
bO+tip	2	2	3	-	
Lax openB+spr	2	2	-	4	-
V	2	2	2	-	2
All handshapes	*100%*	*100%*	*100%*	*100%*	*100%*
N =	*365*	*202*	*96*	*25*	*41*

Table 2.11. The relative frequency of the 16 most frequent dominant hand handshapes across four location types

The frequency of handshapes articulated in neutral space resembles the frequency of handshapes over all locations. This follows from the fact that signs articulated in neutral space form 55% of the total number of signs as was shown in Table 2.10. The frequencies in Table 2.11 show that AdaSL patterns with NGT, in that in signs articulated on the head, handshapes with one finger selected – i.e. bO, X, Closed bB", bO+tip, but especially 1 – are always equally or more frequent than on average, i.e. when all locations are taken together. Conversely, handshapes with all fingers selected, i.e. B, Lax

O, and 5, are more frequent on the body than in any other location. The S hand is infrequent on the body and on the head in AdaSL, as in NGT.

In summary, AdaSL uses a few more locations compared to large sign languages. The fact that these uncommon locations lie outside the usual signing space suggests a larger signing space for AdaSL compared to other languages. The frequency distribution of handshapes and locations in AdaSL, however, seem very similar to those reported for other (large) sign languages.

2.4.6. Sign types and the distribution of dominant hand handshapes

Handshape frequencies have been found to differ not only across location types, but also across sign types in NGT and other large sign languages. As mentioned before, in the literature, three sign types are distinguished which are relevant in the present context: one-handed signs, two-handed symmetric or balanced signs, and two-handed asymmetric or unbalanced signs. In NGT, handshapes containing fewer than four selected fingers (especially the 1 hand) are more frequent in one-handed signs than in two-handed signs. More than half of the balanced signs have all fingers selected (Van der Kooij, 2002:§2.3). In Table 2.12 the relative frequency of the three sign types in AdaSL is presented. For the sake of completeness, entirely non-manual signs articulated by the head, face, or legs, are also included. For purposes of comparison, the frequencies in NGT are presented as well. As no exclusively non-manual signs are represented in the NGT database, the comparison between the AdaSL and NGT frequencies is to some extent biased.

Sign type	Absolute frequency	Relative frequency in AdaSL (n=372)	Relative frequency in NGT (n= 3084)
One handed	191	52%	54%
2-handed, balanced	130	36%	37%
2-handed, unbalanced	41	11%	9%
Non-manual (legs, face, etc)	9	3%	-

Table 2.12. The relative frequency of sign types in AdaSL and NGT

In some signs, the sign type was hard to establish. In some cases, a sign appeared to consist of a sequence of two sign types, as in POISON (1-handed + unbalanced). In other cases, the non-manual articulation of a sign seemed to be at least as significant as the manual articulation, as in FOOTBALL-1 (1-

handed + foot), LIZARD(1-handed + head), INSULT (1-handed + foot), and three different forms of WALK (balanced + leg). These ambiguous cases were counted under both sign types, causing the total number of coded sign types to surpass the total number of sign parts in the database. Thus, FOOTBALL-1, with a significant hand and foot movement, was counted once as 1-handed and once under non-manual. Of all the signs in the database, 3% have no manual articulation, e.g. PALMWINE-2#BLOW, DOG#PANTING, which are articulated by the mouth, and FOOTBALL-2, articulated by the foot. As for the signs with manual articulation, AdaSL patterns very much like NGT in its distribution of sign types.

In Table 2.13 below, the frequency of handshapes across sign types is presented. Again, only handshapes that occur in 2% or more of the overall database are considered, As in NGT, the 1 hand is more frequent in one-handed signs than on average and handshapes with all fingers selected, such as the S, B, Lax B and Lax O hand, are more frequent in balanced signs than on average, with the exception of B" and 5".

HS name	Overall %	One-handed	Balanced	Unbalanced
1	19	25	11	20
S	14	10	19	10
B	13	13	15	10
Lax B	12	11	16	7
Lax O	4	4	6	2
bO	4	5	-	10
B"	3	4	2	5
5	3	2	6	-
5"	3	2	2	10
openB+spr	3	-	3	2
A	2	3	2	2
X	2	3	2	-
Closed bB"	2	2	3	2
bO+tip	2	3	-	-
Lax openB+spr	2	2	2	-
V	2	2	-	2
N^{20}=	365	191	130	41

Table 2.13. The relative frequency of handshapes in the dominant hand according to sign types

[20] Obviously, non-manual signs are not included in this paragraph. Thus, the sum of the signs in the three sign types does not match the total number of signs.

2.4.7. Summary

In this section the frequency of occurrence of phonetic handshapes in the
AdaSL database has been described. In §2.4.1, I reported that 29 phonetic
handshapes were found to occur in either the dominant or the non-dominant
hand or both. As pointed out in §2.4.2, all of these handshapes were found to
occur on the dominant hand, in addition to non-manual articulators. The
dominant hand was also found to be part of a larger articulator, which
includes a particular handshape, but that extends over a considerable part of
the arm, such as S+arm. No handshapes were found in the database with the
independent selection of the middle, ring, or little finger.

   With respect to the frequency of its handshapes, AdaSL patterns like
NGT, ASL, BSL and ISL. It appeared that AdaSL differs slightly from the
other four languages in that the frequencies of the most frequent handshapes
are systematically higher in AdaSL than in the other languages and the
frequencies of the least frequent handshapes are systematically lower. In
AdaSL, 83% of the non-dominant handshapes showed a selection of all
fingers; in less than 17% we found the index finger (and the thumb) as the
only selected digits. As such, AdaSL patterns like NGT. The phonetic B,
Lax B, and B" hands account for the majority of handshapes of the non-
dominant hand in signs with two different handshapes. This seems to reflect
the fact that the non-dominant hand is restricted to unmarked handshapes in
such environments, as claimed for ASL by Battison (1978). The exception to
Battison's Symmetry Condition is the sign FUFU, which has two dissimilar,
moving handshapes. In 11,5% of the signs, a phonetic handshape change
was attested. In all but one case, the selected fingers (i.e. the active, usually
extended fingers) remain constant. Changes in the degree of aperture in the
hand constitute the majority of handshape changes (52%). Not attested in
NGT are the handshape changes termed 'snap' and 'flick', both producing a
short sound.

   The following location types were found to be used: space, head,
non-dominant hand, body, and leg. AdaSL appears to pattern much like
NGT and ASL, except for its use of the leg, the crotch and the back as a
location type. As for the correlation between handshapes and location types,
handshapes with one finger selected are more or equally frequent on the
head than on any other location. Conversely, handshapes with all fingers
selected are more frequent on the body than on any other location. As such,
AdaSL patterns like NGT. In AdaSL, three types of manual signs were
distinguished: 1) one-handed, 2) two-handed and balanced, 3) two-handed
and unbalanced. In addition, the database contains exclusively non-manual
signs. Looking at the correlation between sign type and handshapes, the 1
hand appears to be more frequent in one-handed signs than on average.
Again like in NGT, handshapes with all fingers selected, such as the S, B,

Lax B and Lax O hand, are more frequent in balanced signs than on average, with the exception of B" and 5".

2.5.   **Phonemic handshapes in AdaSL**

In the present section, a set of phonemic handshapes is abstracted from the phonetic handshapes in the AdaSL database, following the approach that Van der Kooij (2002) used in her phonological model for NGT. The model contains a minimal set of distinctive features, aiming at a maximally economic description, whereby the complexity of the representation reflects the markedness of the form. It reduces surface forms in two ways. Firstly, handshape features that are predictable on phonetic grounds are not considered phonemic. Phonetic Implementation Rules account for such features. Phonetic implementation rules specify amongst other things the position of the thumb in certain contexts (e.g. in signs which make contact with a location), the position of the base joints, the position of the non-base joints, the (non-)spreading of the fingers, the degree of aperture, and the position of the unselected fingers (Van der Kooij, 2002:112-134). An example of an implementation rule is rule II.2 (Van der Kooij, 2002:127), which states that 'Base joints are flexed if a combination of the specification of a part of the hand and a specified location (i.e., the relative orientation) requires it for articulatory reasons'. Secondly, handshape features that are exclusively found with an iconic motivation are not considered phonemic either. Rephrased, handshape features that are found to be iconically motivated in all attested cases are excluded from a phonemic status. Semantic Implementation Rules account for these exclusively iconic features. Thus, Van der Kooij's model grants a phonemic status only to those handshape features 1) that are not articulatorily motivated and 2) that do not occur with an iconic motivation in *all* signs, i.e. that are found to recur arbitrarily in at least some contexts. An additional requirement in her model is that a form should at least occur twice, to ensure the productivity of the element.

The phonological description for AdaSL handshapes follows the same format to allow cross-linguistic comparison. Thus, handshapes occurring with no iconic motivation are described, as well as handshapes occurring exclusively with an iconic motivation. Yet, the comparison with the NGT data is based on the former type of handshapes. Unlike Van der Kooij (2002), repeated occurrence was not used as a criterion for considering a handshape as phonemic, due to the relatively limited number of signs in the sample. The phonemic analysis in this section is based on the database of 365 single signs. Occasionally, signs not included in the database, but relevant for a specific argument, are discussed as well. When examples from outside of the database are used, this is indicated between brackets. It is

important to note that the same phonetic handshape may have different underlying handshapes. The handshapes will be discussed on the basis of their groupings according to the number of fingers selected and the aperture. The reader is referred to Table 2.3 for pictures of the handshapes.

2.5.1. Phonemic handshapes with one selected finger

As far as handshapes with one selected finger are concerned, flexion of the metacarpophalangeal or base joints is not found to be distinctive. Flexion of these joints is typically motivated by the relative orientation of the hand, that is, it can be accounted for by a phonetic implementation rule (cf. Van der Kooij, 2002:172). For example, pointing downwards with a 1 hand is easier when the base joint is flexed. Similarly, all eight cases of flexion of the non-base joints, i.e. all signs with an X handshape, can be accounted for by implementation rules. Ease of articulation in maintaining the relative orientation accounts for six of the signs with X hand, e.g. in HERE, HEADACHE#HEAD, and HEAR. The relative orientation of these signs is the tip of the index finger, contacting or pointing at its location. Flexion of the finger joints in the remaining two signs with X handshapes, namely ABURI[21] and ELEPHANT (Fig. 2.1), as well as in the bO+tip handshape in NEW-MOON (Fig. 2.2) is iconically motivated, as in these three signs the handshape represents a curved entity. The latter sign, NEW-MOON, has variants with and without thumb opposition. Hence, the thumb opposition is not considered phonemic in this case. Since all cases of finger joint flexion in handshapes with one finger selected can be predicted by phonetic implementation rules or else are iconically motivated, the 1, X, and bO+tip are considered potential surface variants of an underlying /1 hand/ in AdaSL.

Fig. 2.1 ELEPHANT   **Fig. 2.2** NEW-MOON

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[21] In ABURI, which is a town near Adamorobe, two X hands represent curved sticks beating a drum.

There is much variation in the realisation of signs with one selected finger contacting the opposed thumb. They differ in which finger opposes the thumb (i.e. the index or the middle finger), in the amount of flexion of the non-base joints, and in the exact point where the thumb contacts the finger (i.e. the fingertip, on the first finger pad, etc.). In the case of dynamic handshapes, the variation in the position of the non-base joints is accounted for by the phonetic implementation rules described in Van der Kooij (2002:134). Also, the position of the unselected fingers in /closed 1/ hands varies. The contact point of the thumb on the finger seems to be iconically motivated. When a small entity is represented, the thumb contacts the finger on the tip. When a small extension is represented, the thumb is in contact with the finger between the first and the second joint. When the handling of a medium-sized entity is represented, the thumb makes contact with the second finger joint. The phonetic 8 hand was found in only one sign, BRACELET#GLITTER. Inter- and intra-signer variation in finger selection was found in the sign meaning 'glitter' or 'sparkle'; sometimes the opening handshape change is realized by the index finger and the thumb, sometimes it is realized by the middle finger and the thumb. This supports the decision to include the 8 hand in the /closed 1/ hand. Also included in /closed 1/ is the phonetic open 8 handshape in the first part of BRACELET#GLITTER. Contact between the tip of the middle finger and the thumb is not feasible for articulatory reasons, as the thumb and the middle finger encircle the wrist. The phonetic handshapes closed 1, bO, bO+tip, O, F, closed bB", 8, Open 8 were at least in some signs interpreted as phonetic realisations of the phonemic /closed 1/ hand.

The phonetic Open 1 handshape is found in only two signs in the database. In MOUSTACHE, the initial handshape is Open 1, which closes to closed bB". In MAGGI-CUBE#PUT-DOWN-SMALL, Open 1 is the final handshape opening from bO. Rather than assuming a phonemic handshape /open 1/, the handshape can be derived from the bO hand or the closed bB" on the basis of the handshape change.

The phonetic K hand is found in three signs in the database. Rather than the handshape itself, it seems to be the snapping or flicking handshape change that is significant in these signs. Its usage is discussed in §2.4.4 on handshape change. Rather than proposing a phonemic handshape /K/, the handshape can be derived from /bO/ with a specification for the relevant type of handshape change.

The phonetic A handshape is found in ten signs. In two signs with an A handshape, the extension of the thumb is not distinctive, as in these signs the position of the position of the thumb is found to vary freely. Hence, in these two cases, the A handshape is considered to be the realisation of an

underlying S hand. In the remaining eight signs, the position of the thumb does not vary freely. In two of these eight signs (LIE/USELESS and INSULT-1), the extended thumb makes contact and/or closes and thus needs to be specified. Both signs are arbitrary and are used as insults in the wider Akan community. The sign SNOB, also with an A hand, depicts a type of conventional, gestural behaviour as well and becomes meaningless when the thumb is not extended. In four signs with an A hand, the handshape represents the handling of a long, thin entity. The extension of the thumb may thus be iconically motivated in these cases. Finally, the sign STROLL-1 may be a borrowing from GSL. Considering the distinctivity of the thumb extension in the signs LIE/USELESS, INSULT-1 and SNOB, a phonemic /A/ hand is assumed.

2.5.2. Phonemic handshapes with two selected fingers

Phonetic handshapes with two fingers selected vary in the spreading of the fingers, the flexion of the finger joints and the position of the unselected fingers. Only in the H hand in the sign SPOON the fingers are adducted (not spread). This adduction seems to be iconically motivated as the fingers represent a spoon through entity depiction, that is, the fingers represent the spoon itself, rather than its handling. In the other signs with two fingers extended, variation is found in the spreading of the fingers. Typically, this spreading is only slight. The flexion of the base joints in the H hand in SPOON seems to be iconically motivated. Phonetic variation is also found in the position of the unselected fingers. For example, in FRIDAY all fingers are nearly in the same position. As such, the phonetic handshape is actually quite close to a 5 hand. However, as the index and the middle fingers are the only fingers contacting the location (which is the forehead), they alone are considered to be selected. The extension of the ring and little finger is an adjustment to the articulatory context. Similarly, the one-handed sign SNAKE-BITE has a phonetic handshape in which all fingers are more or less in the same position. In this sign, the index, middle finger and the thumb of the 5" handshape contact the arm of the non-dominant hand. The flexion of the finger joints in this 5" handshape is a consequence of the relative orientation, as the index and middle finger and the thumb contact the location. The finger selection and aperture are iconically motivated. Although at the surface level the 5" handshape in SNAKE-BITE resembles handshapes with all fingers selected, only the position of the index and the middle finger is phonemic. In short, as the flexion of the finger joints of the selected and unselected fingers, the adduction or spreading of the fingers and the presence of aperture correlate with the articulatory context or the iconic motivation of the sign, only the actual selection of the index and the middle finger is

considered phonemic. Thus, a phonemic /V/ hand is assumed, which has the surface realisations of V, V+USF, H, and 5".

2.5.3. Phonemic handshapes with all fingers selected

As was discussed in 2.4.1 two-third of AdaSL signs has a handshape with all fingers selected. The handshapes differ in the amount of flexion of the base and non-base joints, in spreading, and in tenseness. Notably the variation in tenseness complicates the identification of distinctive features in the handshapes with all fingers selected. The selection of all fingers as opposed to only one or two can be distinctive in AdaSL. The lax handshapes Lax B, Lax O, Lax C, lax openB+spr, and 5" in some cases appear to vary with more tense shapes – for example, the S hand occurs in variation with the Lax O and Lax C hand. In other cases, the laxness of handshapes (and their handshape change) seems to be determined completely by the (relative) orientation of the sign. Thus, in the database, the sign GO has a Lax B hand, but variants are found with Lax openB+spr, Lax B changing to 5, Lax 1 and Lax C. Typically, the sign begins with only slightly flexed base and non-base joints which slightly increase their flexion during the execution of the sign. This slight increase in flexion seems to be caused by a change in wrist flexion from flexed to hyperextended. Hyperextension of the wrist joint causes contraction of the tensors of the fingers (Mandel, 1981) and thus flexion of their joints. The underlying handshape specification of GO may have no other specifications than /all fingers/, whereby the spreading, aperture and flexion of the finger joints depend on articulatory context. The variants with Lax openB+spr and Lax1 suggest that the handshape in GO may not even be specified underlyingly for /all fingers/, but may be empty all together. Signs in which the handshapes behave in a similar way include SUN, COME, WH-SIGN, NOT-GOOD, STIR, YOUNGER SIBLING, ANGRY, IT-IS-NOTHING, UP/GET-UP, and CHICKEN. Similar handshapes are also found in signs in which the arm seems to be the main articulator: WELCOME#HAPPY, GUAN, EWE, BOTTLE (not in the database). Thus, an empty handshape /ø/ is postulated.

The variation in phonetic realisations of handshapes with all fingers selected concerns tenseness, variation in spreading, variation in flexion of base and non-base finger joints, and thumb opposition. These features are discussed one by one.

Tenseness
In some signs, Lax B and Lax openB+spr vary with more tense B hands. This variation is not distinctive and seems to be free.

Spreading
Handshapes with adducted and extended fingers were coded as B hands and handshapes with spread extended fingers were coded as 5 hands. Handshapes with only minor finger spreading were counted as B hand. In fact, B hands with fully adducted fingers are rare in the database. Coding handshapes with all fingers extended and only slightly spread as B hands affects the frequency of phonetic 5 hands in the AdaSL database. Due to this procedure, the 5 hand appears to be significantly less frequent in AdaSL than in other sign languages (see Table 2.5). The distinctivity of spreading can be questioned, as handshapes with spread and adducted fingers vary between realisations of signs. In fact, the variation is even attested within two-handed balanced signs, which typically have the same handshapes. Thus, in CATERPILLAR#FLATTEN-2, the dominant hand has an OpenB+spr handshape and the non-dominant hand has a Lax B handshape. The spreading in handshapes with all fingers selected may be a form of free variation. Elsewhere, the spreading, in combination with gradually increasing flexion of the base joints from the index to the little finger, i.e. B-fan and B^fan, is motivated by the need to maintain a particular orientation of the hand. This seems to be the case us in the two-handed, balanced signs CARPENTER, BICYCLE, BOAT, and ROAD (not in the database), which have the fingertips oriented downwards and the palms of the hands facing each other. Of the signs in the database with all fingers selected, only the spreading of the fingers in TURKEY may be distinctive, but it is iconically motivated. It conveys the largeness of the form represented. As the spreading of the handshapes with all fingers selected seems to be the result of articulatory and iconic motivations, no phonemic spread handshape with all fingers selected is assumed.

Flexion of the finger joints
Two types of finger flexion have to be distinguished; flexion of the metacarpophalangeal or base joints and flexion of the non-base joints. As far as the former is concerned, only one sign, PREGNANT, was found with flexion exclusively of the base joints. The flexion seems to be motivated both phonetically and iconically. Phonetically, the flexion seems to facilitate the maintenance of the relative orientation. Iconically, the curved handshapes represent the outline of a big belly.
In other signs, both the base joint and the non-base joints are flexed.
As far as flexion of the non-base joints is concerned, two handshapes are relevant; B" and Lax O. In six of the twelve signs with a B" handshape in the database, the flexion of the finger joints is the result from a specification for relative orientation. Thus, in six of these, the B" handshape contacts a curved body part with the palm of the hand, e.g. in REGRET/HEADACHE. A

specification for relative orientation (being the palm side of the hand) plus a specification for contact cause the phonetic handshapes to have flexed finger joints. Similarly, in HALF, the fingers of the dominant hand are perpendicular to the non-dominant hand, making a cutting movement. The relative orientation of the handshape of the dominant hand is facilitated by the flexion of the finger joints, resulting in a B". In four signs, the B" hand represents a curved entity, as e.g. in CUP.[22] The flexion of the finger joints in CHILD cannot be explained by reference to the relative orientation of the hands or their iconic motivation. Three variants of this sign exist with a B, a B^/B", and an S handshape. Although the flexion of the finger joints in the variant with the B" handshape cannot be explained by articulatory context or iconic motivation, it is not distinctive either. Thus, the flexion of the finger joints in one variant of the sign CHILD is considered free variation. In two of the sixteen signs with Lax O handshapes, i.e. in PUT-BABY-ON-BACK and HOE, the flexion of the finger joints cannot be interpreted as being the result of a specification for aperture, as the position of the thumb in these two signs does not seem to be distinctive. The flexion of the finger joints in these signs is iconically motivated as these two Lax O handshapes represent curved entities. Thus, the hands in PUT-BABY-ON-BACK represent human hands with the same shape and the hand in HOE represents the curved shape of a hoe. Out of 11 signs with a 5" handshape, the flexion and the spreading of the fingers is iconically motivated in 9 signs, e.g. in CATCH. In the two remaining signs, PEPPER-2 and GSL/ASL, the 5" hand holds the other hand between its index and thumb. These handshapes are seen here as phonetically motivated variants of the /closed 1/ hand and the /B/ hand, respectively.

In short, some handshapes with all fingers selected, in particular, lax handshapes do not seem to have an underlying specification at all. Their surface realisation is the result of articulatory context only. For these handshapes, a phonemic /ø/ hand is postulated. Signs with all fingers selected may vary non-distinctively in a number of features. Variation in spreading can be accounted for by phonetic or iconic implementation rules and is thus not assumed to be phonemic. The same holds for flexion of the finger joints. A notable exception is the variation in flexion of the base joint in the sign for 'child', which cannot be accounted for by an articulatory or iconic motivation. As the flexion in this sign is not distinctive, no phonemic handshape with all fingers selected and flexion of the base joints is

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[22] The B" makes a scooping movement through space, with the palm of the hand facing up. The sign represents the scooping of water from an open barrel with a cup. The hand depicts the cup through entity depiction.

postulated. On the basis of the present data it seems reasonable to assume an empty handshape and a phonemic /B/ hand.

2.5.4. Phonemic handshapes with all fingers selected and aperture

Phonetic handshapes with all fingers selected and an opposed thumb are S, O, Open B, Closed B, Lax C and Lax O. In the phonetic coding, handshapes with all fingers selected and contacting the thumb were coded as an O hand when the finger joints were clearly flexed. Handshapes coded as Closed B had finger joints that were only slightly flexed. Whereas minimal pairs for Closed B and S were found, no minimal pairs for O and Closed B were found.

S, A, Lax O and Lax C
In the database, 14% of the signs use a phonetic S hand. The phonetic S hand is found to vary with the A hand, as noted earlier. Outside the database, lax realisations of the phonetic S hand have been found to vary with the Lax O handshape, as in WOMAN, DRINK/DRUNK, MILK-1#HORN, SHOES-1, and KENKEY (a ball of maize-dough packed in banana leaves). The lax C hand is found to vary with the phonetic S hand as well. This variation is attested, for instance, in the non-dominant hand in the two-handed, balanced sign BABY in the database. The dominant hand in this sign has an S handshape. Normally, this sign has two S hands. The phonetic S hand being contrastive with among others the phonetic B hand, I assume a phonemic /S/ hand, which may have phonetic realisations as an S, A, Lax O or Lax C hand.

Open B
The opposition of the thumb in the Open B handshape, which occurs only once, in SINGLET#DRESS, is non-distinctive and a consequence of the ulnar side of the hand touching the trunk. Thus, no phonemic Open B handshape is assumed.
The Open B hand may be a phonetic realisation of an underlyingly unspecified handshape, i.e. the /ø/ hand.

O and Closed B
All eight signs with a phonetic O hands in the database are either the initial handshape in a sign with an opening handshape change, as in LIGHT, WITCHCRAFT, SALT, and STARS, or they refer to (the handling of) something small, as in MEDICINE, SMALL, POISON, and COOK. The sign initial O hands do not contrast with the S and the Closed B hand. These handshapes mainly differ in the degree of flexion of the finger joints. However, the S and the Closed B are not found in signs with an opening handshape change. Thus,

the selection of the O hand seems to be specified at the surface level. As the O hands in static signs are all iconically motivated, none of the phonetic O hands may have a phonemic status as such. The O hand seems to be in complementary distribution in dynamic signs with the Closed B hand. Thus, the Closed B handshape is found as the final handshape in two signs with a closing handshape change: BREAD and ARMCHAIR#SOFT. In static signs, the variation in flexion of the non-base joints is rather free. Three static signs, EAT, SWEET-4, and BUY, were coded as having a Closed B hand. The handshape is not iconically motivated in SWEET-4 and therefore a phonemic /O/ hand is postulated.

MS.THUMBTIP
This phonetic handshape, consisting of the index contacting the thumb at the non-base joint, is the one-handed variant of the measure stick sign MS:thumbtip. Rather than a bound handshape, it is a sign on its own. The phonologically unusual behaviour of measure stick signs is discussed together with their use in §4.3.4.

In a number of signs depicting the handling of an object, especially in signs for types of clothes, there is variation in the form of the different handling handshapes. Thus, the sign TROUSERS has been observed with an S, Lax O, Lax C, and a closed bB" hand. Other signs with similar variation are DRESS, SKIRT, and TAKE. In contrast, the variation in handshape in TAKE is not determined by features of the entity taken. Rather, the handshapes observed in this sign convey a general type of handling. It is difficult to assign them to one phonemic handshape. Alternatively, their underlying form may be specified for aperture or thumb opposition only, which may be represented as {ø + aperture}.

2.5.5. The set of phonemic handshapes

The set of underlying handshapes found in AdaSL on the basis of the previous analysis is presented in Table 2.14. Following Van der Kooij (2002), a distinction is made between handshapes that occur only with an iconic motivation and handshapes that also occur arbitrarily. Distinctive handshapes found to occur without an iconic motivation are presented in the left column of Table 2.14. Defining the phonology of a sign language as consisting of arbitrary building blocks allows its description in terms of a limited set of features. Yet, it provides no answer to questions about the form and function of the pervasive iconicity in the smallest building blocks of sign languages. A full description of the smallest units of a sign language requires a description of iconic elements. Therefore, distinctive handshapes occurring exclusively with an iconic motivation are rendered in the right column of

Table 2.14. For purposes of comparison, only the distinctive handshapes found to occur arbitrarily are considered, as the same criterion has been applied to the NGT handshape data. The distinctive features in the set of arbitrary handshapes are finger selection (index, index and middle, all or no fingers) and aperture in those cases where all fingers are selected.

Arbitrary handshapes	Iconic handshapes
/1/	{closed 1}
/A/	{bO}
/V/	{closed bB"}
/B/	{closed V}
/S/	{5}
/O/	{ø+aperture}
/ø/	

Table 2.14. The set of underlying AdaSL handshapes

The seven phonemic handshapes proposed here for AdaSL contrast sharply in number with the 31 phonemic handshapes assumed for NGT by Van der Kooij (2002), who uses a similar approach. The set of AdaSL handshapes appears to be limited not only in number, but also in complexity. All handshapes either have all, one or no fingers selected. The only handshape with a different number of selected fingers is the /V/ hand. No handshapes with selection of the little finger are found. AdaSL resembles other sign languages with no large Deaf community in that they have a small set of basic handshapes. Obviously, the decision to exclude exclusively iconic handshapes from the phoneme inventory diminishes the number of handshapes in the set. However, the size of the handshape inventory is compared with the NGT handshape inventory as proposed by Van der Kooij, from which exclusively iconic handshapes were also excluded. As the number of signs on which the analysis is based is relatively small, the set of phonemic handshapes proposed should be considered preliminary. Still, I wish to point out that the signs collected in the database seem to form the majority of the signs used in AdaSL, suggesting that additional data collection will not yield a radically different result.

2.5.6. Summary

Following Van der Kooij (2002), the set of seven phonemic handshapes is based on handshapes that are found with an arbitrary use (possibly in addition to iconically motivated usage). These handshapes are /1/, /A/, /V/, /B/, /S/, /O/, and /ø/. For descriptive completeness, the six distinctive handshapes found to occur exclusively with an iconic motivation are represented separately. These are {closed 1}, {bO}, {closed bB"}, {closed

V}, {5}, and {ø+aperture}. In both categories, highly underspecified handshapes are proposed, viz. /ø/ and {ø+thumb aperture}. In the former, the phonetic handshape is determined entirely by phonetic or iconic implementation rules. In the latter the handshape is only specified for aperture or thumb opposition. The remaining features need to be filled in on the basis of phonetic and iconic implementation rules.

2.6.   Iconic motivation in phonetic handshapes

In the previous section it has been shown that iconicity is present to a considerable degree since some handshapes can be considered as only iconic. In this section, the iconic motivation of all handshapes in the context of specific signs will be discussed. As exclusively iconic handshapes were not given a phonemic status in §2.5, the handshapes considered in the present section, §2.6, concern phonetic handshapes. For several types of sign languages without a large Deaf community it is claimed that they are more iconic than those with large Deaf communities. The degree of iconicity of a sign language is likely to be reflected in the handshape parameter. Only handshapes with a frequency of 2% or more in the AdaSL database (see Table 2.4) will be considered.

It must first be pointed out that none of the AdaSL signs in the database has an initialised handshape, i.e. a handshape taken from the hand alphabet. The only initialised signs in AdaSL are personal name signs (discussed in §3.6). These were not included in the database. Several types of iconic motivation of signs and their parts are distinguished in the sign language literature. Although overlap and combinations are found, basically three categories can be distinguished (Taub, 2001; Mandel, 1977). Examples from AdaSL are provided.

1. *Handling handshapes* represent the handling or manipulation of (part of) an object, e.g. the S hand in CARRY-BAG (Fig. 2.3).
2. *Entity handshapes* as a whole represent the entity referred through entity depiction, e.g. the S+arm in BOTTLE (Fig. 2.4).
3. *Tracing handshapes* draw a virtual size and shape in the air, e.g. 1 hand in KIOSK (Fig. 2.5).
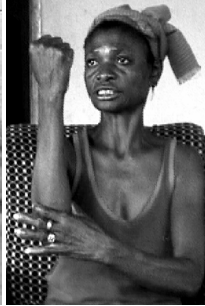
Fig. 2.3 CARRY-BAG   **Fig.2.4 BOTTLE**   **Fig.2.5 KIOSK**
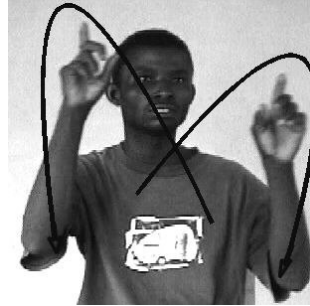
In her description of Indo-Pakistan Sign Language, Zeshan (2000) takes handling and tracing handshapes together in a 'representation of outline' group and opposes this group to the 'representation of entity' group. Phonetic handshape can have more than one, often overlapping, iconic function in a sign language. Thus, it seems that in many sign languages the F hand can have at least three functions:

1. It can represent a ring-shaped entity through entity depiction,
2. It can represent the handling of a thin or fragile entity or
3. It can trace the outline of a narrow cylinder.

Within a single sign, the iconic function of the handshape may be ambiguous as well. For example, when a tracing O hand represents a pipe, the O hand can be considered an entity handshape representing the matter of the pipe plus a tracing movement, tracing the extent of the pipe. Similarly, the C hand in the sign CUP (BEKER) in NGT may represent a hand handling a cup or it may represent the vertical sides of the cup itself.[23] In §2.6.1, the frequencies of types of iconic motivation are given. In §2.6.2 and §2.6.3 below, a descriptive list is provided of the iconic motivation of handshapes with one or two fingers selected and of handshapes with all fingers selected, respectively.

2.6.1. Depiction types in handshapes

The iconic handshapes of single signs in the database were coded for depiction type. In addition to handle, entity and tracing depiction, arbitrary handshapes, indicating or pointing handshapes and a rest category of 'motivation not clear' handshapes were distinguished. The frequency of category is presented in Table 2.15.

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[23] This sign consists of a C hand making a short, repeated, downward movement in space. Source: http://www.gebarencentrum.nl, viewed in June 2006.

Motivation	(n=405)[24]
Entity depiction	39%
None: Arbitrary	23%
Handle depiction	17%
Not clear	11%
Indicating	6%
Tracing	4%

Table 2.15. The relative frequencies of depiction types in AdaSL handshapes

Entity depiction appears to be the most frequently used type of depiction in AdaSL. The representation of human or animal limbs, coded as entity depiction, forms one-third of the cases of entity depiction. Tracing appears to be the least frequently used iconic strategy in lexical signs. Almost a quarter of the signs have an arbitrary handshape. For the most part, these are the lax handshapes discussed in §2.5.3 and §2.5.4 which have been claimed to have little or no handshape specifications.

Lacking comparative data on other sign languages, the frequencies of types of iconic motivation cannot be evaluated cross-linguistically. Thus, the degree of iconicity of the lexicon cannot be evaluated against the repeatedly reported higher degree of iconicity in sign languages with no large Deaf community (see §2.1). Similarly, it cannot be established at this point whether the high frequency of entity depiction and the low frequency of tracing signs in AdaSL is common cross-linguistically.

2.6.2. Handshapes with one or two fingers selected

1 & X

Of the 70 signs with a phonetic 1 hand, 39% represent an entity through entity depiction, as in TOOTH-BRUSH and STICK. The hand has an indicating function in 13%, and a tracing function in 9% of the 1 hands in the database. Of the 6 tracing signs, 5 trace a straight path, and only in one sign, KIOSK, the fingers trace the boundaries of a surface (Fig. 2.5).
Of the 8 X hands in the database, 6 have an indicating function. Only two signs, ABURI and NEW-MOON, represent a curved object through entity depiction.

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[24] In some unbalanced signs, the iconic motivation of one hand is different from the motivation of the other, such as in GUN-1, where one lax hand represents a gun, which is a case of entity depiction, and the other represents pulling the trigger, and is thus a handling handshape. In such cases, each motivation was counted separately. For this reason, the total number of motivations found is larger than the number of single signs (365) encoded.

bO, bO+tip, Closed bB" & O

All of the 14 signs with a bO handshape, as well as 4 of the 8 signs with an O handshape represent a small entity. They do so as handling handshapes or as entity handshapes, though is it often hard to distinguish the two types of representation in this handshape. In the remaining 4 signs with a phonetic O hand, this is the initial handshape of a sign with an opening handshape change. In some signs, the bO handshape seems to represent the handling of a small object, as in MATCHES and WRITE. Yet, the bO hand commonly varies with the bO+tip, which has the index extending slightly over the point of contact with the thumb. This suggests that the tiny part of the tip of the index represents a tiny entity directly, that is, through entity depiction, rather than through handling. This latter interpretation would be more in line with the system of measure stick signs to be described in §4.3.4.

Interestingly, the round shape of the hand is not used to represent the round shape of an entity. Rather, the salient feature of this handshape seems to be the contact between the finger(s) and the thumb.

Lax O hands (n=15) represent curved entities through entity depiction in four signs, but they are in most cases considered phonetic realisations of the phonemic S hand (see 2.5.3).

The Closed bB" hand (n=8) represents the manipulation of small entities in 5 signs. It is the final handshape in 3 signs with a closing handshape change.

A

As noted in the §2.5.1, in 4 out of 8 signs with an A hand, the handshape represents the handling of a long, thin entity.

V, V+USF, Closed V"

Out of the six signs with a V handshape, the fingers represent the fingers handling the object in one sign, CIGARETTE. The V+USF handshape in FRIDAY also represents handling fingers, but here they represent the application of white clay on the forehead with the fingertips (see 3.5). In SCISSORS and SPECTACLES, the fingers represent an entity through entity depiction. In one sign, SAME/SIBLING, the two fingers represent two abstract entities.

2.6.3. Handshapes with all fingers selected

S

Of 52 phonetic S hands, 27% represent a hand or foot of a human (or a monkey in MONKEY), 25% represent an entity through entity depiction, 21% through handling depiction. In ORANGE, SOAP, and EGG, the iconic

motivation may be handling or entity depiction. In 6% of the signs, the motivation is not clear or the form of the sign is arbitrary.

B
Of 48 signs with a phonetic B hand, 38% of the handshapes are arbitrary. In 10% of the handshapes, the motivation is not clear. In 17%, the B hand represents a human hand; in 23% it represents the referent object through entity depiction. In the sign BOX the B hands represent the sides of a box either through entity or handling depiction. In SEWING-MACHINE-1, the B hand represents handling. In one sign, OLD-PERSON, the B hand has an indicating function. In three signs, LOT-OF-MONEY#PILE, UNDERWEAR, and SHORTS#UP-TO-KNEE, the B hand indicates an extent.

B"
Of the 12 phonetic B" handshapes, 4 are not iconically motivated. One of these concerns a borrowing from GSL, i.e. the sign ASL/GSL. The other three concern lax phonetic handshapes with an underspecified or no phonemic handshape, as discussed in §2.5.3. Three handshapes represent the referent object through entity depiction, three do so by handling depiction. In two signs, STOVE-2#ROUND and PREGNANT, the hands show the outline of a virtual round object.

5"
Of the 11 phonetic 5" hands, 7 represent the referent object through entity depiction. In two signs, the 5 hands trace lines on the face, i.e. in GHOST and NORTHENER. In the sign, BISCUIT, the fingertips of the 5 hand print a round shape on the non-dominant hand.

5
Out of the 12 signs with a 5 hand, the handshape represents a body part in only one sign, FLY. In two signs, it traces a surface. The 5 hand is the final handshape in a dynamic handshape in 3 signs, two of which refer to glittering, as in BRACELET#GLITTER and LIGHT#RADIANCE-FROM-ABOVE. In four signs the handshape is arbitrary, as in DIFFERENT and FINISH.

Lax B
Out of 44 Lax B handshapes, 18 are arbitrary, as in FALL, FINISH-1, MAT#LIE-DOWN. In 11 signs, the Lax B hand represents a body part, usually a human hand, as in HEAD-MASSAGE or CHICKEN. It represents an entity other than a body part through entity depiction in 5 signs, e.g. in SLICE, FARM, and COMB. It traces a surface in four signs, e.g. in TABLE and PAN.

Lax openB + spr, OpenB+spr

In all six signs with a Lax openB +spr handshape, the handshape is arbitrary. Of all nine signs with an OpenB+spr handshape, the handshape is the final shape of a dynamic handshape in 5 signs. Such dynamic handshapes represent emission in four signs, e.g. WITCHCRAFT and SALT, and long thin lines in one sign, OKRO. The spreading suggests a larger volume in the case of TURKEY.

It appears to be possible to make an important generalization on the basis of the iconic functions of the handshapes discussed above. For NGT, Van der Kooij (2002) has shown that in their iconic use, round handshapes with thumb opposition, such as the bO, O, X, C, and bC can, in NGT, all represent the outline of round or curved objects through tracing. In AdaSL, however, these handshapes are not used to trace the outline of curved objects.[25] The X hand does represent curved objects in the AdaSL database, in ABURI and NEW-MOON, but it does so through entity depiction. In §2.4.2 it was found that round handshapes with thumb opposition occur systematically less frequent in AdaSL than in NGT, ASL, BSL and ISL. The low frequency of these handshapes may correlate with the infrequent use of tracing depiction in general, as found in §1.6.1. The iconic representation of size and shape by handshapes is discussed in more detail in §4.3.4.3.

2.7.   Conclusion

In previous studies describing sign languages without a large Deaf community, a number of phonological features recur which are typically evaluated relative to sign languages of large Deaf communities. The following characteristics are repeatedly mentioned: 1) a small set of unmarked handshapes, 2) a proliferation of locations, 3) a large signing space, 4) extensive use of non-manual elements, and 5) a high degree of iconicity. From the historical tendencies identified in ASL phonology, we may conclude that older ASL was phonologically closer to sign languages with no large Deaf community than contemporary ASL. The tendencies found by Frishberg (1975) show in some detail how a sign language may move away from the features described for sign languages without a Deaf community, that is 1) signs made on the face move to the periphery of the face, 2) two-handed signs on the head become one-handed, 3) signs below the face centralize, 4) two-handed unbalanced signs become balanced, 5) lexical information is concentrated on the hands, reducing multi-

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[25] A debatable exception is the Lax C hand in PHOTO, which is probably a borrowing from GSL.

channelledness, and 6) compounds simplify. In general, these phonological developments lead to a decreased degree of iconicity.

In this chapter, a description of AdaSL phonology was given, with emphasis on the handshape parameter. To this end, 365 single signs were coded for a number of phonological features (see §2.2). The findings were compared mainly with the description of NGT in Van der Kooij (2002). To increase comparability, the model Van der Kooij (2002) developed for NGT was also used as a descriptive model for AdaSL. The model distinguishes phonetic handshapes from abstract phonemic handshapes. In §2.4, data on the frequency and distribution of phonetic articulators were given. In addition to the hand, the head, the face, the arms, and the legs were found as articulators. Mouthings occur in 15% of the database. The frequency of mouth gestures was not quantified. However, the degree of multi-channelledness on the lexical level in AdaSL seems to be high. In the database, 29 phonetic handshapes are found to occur on the dominant hand, 14 of which are also found on the non-dominant hand. In a number of signs, the articulator includes the hand, but extends to the lower arm. No handshapes with selection of the little finger were found. AdaSL patterns with NGT, ASL, BSL and ISL with regard to the frequency ranking of handshapes. As in NGT, 83% of the handshapes on the non-dominant hand have all fingers selected while 17% have only the index selected. As such, all signs are in accordance with Battison's conditions on symmetry and dominance (Battison, 1978). An exception is FUFU, which has two dissimilar, moving handshapes. Handshape change is found in 11.5% of the signs. In all but one case, the selected fingers remain constant. The majority of handshape changes (52%) concern changes in the degree of aperture. Not attested in NGT, are the handshape changes 'snap' and 'flick', both producing a short sound.

The location types used are space, head, non-dominant hand, body, and leg. AdaSL patterns with NGT and ASL, except for its use of the leg, the crotch and the back as a location type. On the head, handshapes with one finger selected are more or equally frequent than on average. Conversely, handshapes with all fingers selected are more frequent on the body than on any other location. In this respect, AdaSL patterns with NGT.

As in other sign languages, three types of manual signs are distinguished: 1) one-handed, 2) two-handed, balanced, 3) two-handed, unbalanced. In addition, the database contains exclusively non-manual signs. As for the distribution of handshapes over sign types, the 1 hand is more frequent in one-handed signs than on average, as is the case in NGT. Again, as in NGT, handshapes with all fingers selected, such as the S, B, Lax B and Lax O hands are more frequent in balanced signs than on average, with the exception of B" and 5".

In §2.5, phonemic handshapes were abstracted from the phonetic handshapes found in the database, taking into account distinctivity, phonetic variation, and iconic motivation. Following the procedure suggested by Van der Kooij (2002), the set of seven phonemic handshapes was established on the basis of handshapes that are found with an arbitrary use (possibly in addition to iconically motivated usage). These handshapes are /1/, /A/, /V/, /B/, /S/, /O/, and /ø/. For descriptive completeness, the six distinctive handshapes found to occur exclusively with an iconic motivation are represented separately. These are {closed 1}, {bO}, {closed bB"}, {closed V}, {5}, and {ø+aperture}. In both categories, highly underspecified handshapes are proposed, viz. /ø/ and {ø+aperture}. In these cases, the phonetic handshape is determined (almost) entirely by phonetic or iconic implementation rules. Compared to NGT, AdaSL uses handshapes that are less marked.

In §2.6, the iconic motivation of phonetic handshapes has been discussed. Round handshapes with thumb opposition, used in NGT among others for outline depiction, are not used as such in AdaSL, which may be an explanation for their infrequent occurrence in AdaSL as compared to NGT and other sign languages.

Having a small set of unmarked handshapes, a large proliferation of locations, a large signing space and making extensive use of non-manual articulation in comparison to NGT, AdaSL phonology seems to pattern with other sign languages with no large Deaf community. AdaSL differs from NGT and ASL in the iconic functioning of at least some phonetic handshapes, i.e. round handshapes with thumb opposition. It is likely to differ in it this respect from sign languages without a large Deaf community as well, as no difference in the type of iconicity used has been reported between sign languages with different types of user communities. Thus, the high frequency of entity depiction and the low frequency of outline depiction do not seem to be related to the presence or absence of a Deaf community and seem to be a language-specific feature.

3. SEMANTIC FIELDS

3.1. Introduction

On the basis of typological research, general patterns have been found in the terminology for items in particular semantic fields. The number and distribution of basic lexical terms, as well as the categories these terms distinguish may differ from one language to another, but despite the variation universal tendencies and implicational hierarchies have been detected. Such tendencies and hierarchies have been studied extensively for the fields of colour terms, kinship terms, and numbers.[26] Data on these particular semantic fields are also available for a number of sign languages. Data on colour terms are often mentioned incidentally in descriptions of sign languages and in dictionaries but Woodward (1989) systematically compared colour terms in ten sign languages. A number of papers address the issue of kinship in individual sign languages (including Massone & Johnson, 1990 for Argentinean Sign Language; and Peng, 1974 for Japanese Sign Language). Woodward (1978) compared kin terminology in twenty sign languages. Studies of number systems in sign languages include Katseff (2004), who looks at the development of the numeral system in Nicaraguan Sign Language and Fischer (1996), who traces the historical development of the ASL numeral system. Woodward's comparative studies on colour terms and kinship terms suggest that the universal patterns found for spoken languages also occur in sign languages.

In addition to those semantic fields showing universal tendencies across spoken and sign languages, the semantic fields of time expression and name signs in AdaSL are described. These two semantic fields show some similarity across sign languages. For the expression of time, many sign languages make use of time lines, which visualise the conceptualisation of time in space. Nevertheless cultures differ in the conceptualisation of time in space and so do sign languages in their use of time lines. A semantic field that has attracted considerable attention in the study of sign languages is name signs. Making extensive use of (iconically) motivated elements, names in sign languages differ significantly from names in spoken languages. Name sign studies have addressed the etymology and motivation of names as well as social matters concerning assignment, relative status of certain types of names, etc (Yau, 1989, Supalla, 1992). Across sign languages, name signs

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[26] For a comprehensive overview of the findings and discussion concerning colour and kinship terminology, see Foley (1997). Greenberg (1978) studies cross-linguistic tendencies in number systems.

appear to form a special group with regards to phonology (Nyst & Baker, 2003).

In the following sections five semantic fields are examined for AdaSL, i.e. colour, kinship, numbers, time and names. The forms found are evaluated with respect to the universal properties found across spoken and other signed languages. Where relevant, other aspects of the semantic field are discussed. The semantic fields are compared in some detail with Akan, the dominant spoken language in the village, to identify contact-induced parallels in the two languages.

3.2.   Colour terms

3.2.1. Universals in colour terms

Berlin & Kay (1969) found an implicational hierarchy governing the existence of basic colour terms in spoken languages. Basic colour terms are defined as being : 1) mono-lexemic, 2) not included in another colour term, 3) not restricted to a subset of coloured entities, 4) native, 5) mainly referring to colour, rather than a coloured entity, and 6) psychologically salient, e.g. they can be modified for intensity by a specific term. Table 3.1 shows the colours for which basic terms have been found in languages with two, three, or four basic colour terms. In a language with two basic colour terms, it is always white (light) and black (dark) that are distinguished. If a language has three basic colour terms, then the colours distinguished are black, white, and red. If a language has a fourth colour term, this is in general yellow or a term covering both blue and green colours, sometimes referred to as 'grue'. Thus, the presence of a basic term for red implies a basic term for white and black, a basic term for orange implies a basic term for red, and so on.

Two colours	black & white
Three colours	+red
Four colours	+yellow or + blue-green ('grue')

Table 3.1. The colours occurring in languages with two, three and four basic colour terms

3.2.2. Colour terms in Akan

Akan, the spoken language of the Adamorobe, seems to fit this hierarchy having a fairly limited basic colour system. No studies have been found on the Akan colour system but based on a study of dictionary entries in Christaller (1933) and Akrofi, Botchey & Takyi (1996), the following

observations can be made.[27] The adjectives for 'white', 'black', and 'red' are *fitaa*, *tuntum,* and *kɔkɔ*, respectively. Their primary meaning is their colour denotation. These forms may be reduplicated, resulting in an intensified interpretation; *fitafitafita*, *tuntuntum*, and *kɔkɔɔkɔ* respectively. Akan also has some colour verbs, e.g. *biri* for 'to be(-come) black' or *bere* for 'to be(come) red'. Whereas the colour adjectives for 'white', 'black' and 'red' are found in all dictionaries, the colour verbs are mentioned in only some of them. The terms for 'black', 'white' and 'red' seem to be basic terms in Akan in the way Berlin & Kay define the term.

The other colour terms found in Akan do not meet Berlin & Kay's criteria for basic colour terms. The word for 'blue', *bruu,* is a borrowing from English. Several words exist for 'green', most of which refer to 'unripe' or 'fresh' (*bun* and *mono*) and 'leaves' in the case of *ahabam-mono*, literally 'fresh-leaf'. The word for 'yellow' is *akokɔ srade*, which literally means 'chicken fat'. The word for 'brown' is derived from the stem of *dow* 'to become roasted' and may appear as a verb, an adjective or a reduplicated ideophonic adverb. Sometimes the word *nsõ*, literally 'ashes', is given for 'grey'. The word for '(the fruit) orange' is sometimes used for the colour orange or yellow. No entry was found for 'purple'. Since all of the above terms are either borrowed colour terms or terms mainly referring to coloured entities, they do not meet the criteria for basic colour terms.

3.2.3. Colour terms in sign languages

According to Woodward (1989) and Yau (1992), sign languages follow Berlin & Kay's hierarchy. Looking at colour terms in ten unrelated sign languages, i.e. the sign languages of Providence Island, the United States, France, Mainland China, Hong Kong, India, Saudi Arabia, Japan, Taiwan, and Australia, Woodward (1989:145) notes that "...for naming colours sign languages follow universal patterns not dependent upon the channel of language expression and reception."
In sign languages, colour terms are formed in at least five different ways:
1. *Derivation*: A (derived) sign for an entity typically bearing a specific colour is used. The meaning of the sign for an entity with a typical colour is extended to include reference to the typical colour. The sign for the fruit orange in NGT (Sign Language of the Netherlands) may also mean the colour orange.
2. *Pointing*: An object directly available in the environment is pointed at. In Providence Island Sign Language, all colours, except black

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[27] I thank Dr. Felix Ameka for his help in identifying the motivations of colour terms in Akan.

and white, are expressed by pointing at coloured objects available to
the signer, such as a coloured shirt, bucket, etc. (Washabaugh,
1986:34). In several sign languages, pointing colour signs point at a
body part typically bearing a specific colour, as will be discussed in
more detail below.

3. *Mouthing*: Some sign languages, like older variants of NGT, have a
   set of colour mouthings (movements of the mouth based on spoken
   words). Combined with a generic manual sign, these mouthings
   form a colour sign.

4. *Initialisation*: Signs incorporating a fingerspelling handshape
   representing the initial letter(s) of the colour in a spoken language
   are used.

5. *Arbitrary colour signs*: none of the above motivations can be
   detected in arbitrary colour signs, e.g. PURPLE in NGT.

Although Woodward is probably right in stating that sign languages follow
universal patterns in the field of colour terminology, there is a
methodological problem in defining the basic colour terms in sign languages.
Strictly applying Berlin & Kay´s criteria, only the arbitrary colour signs
(type 5) should be considered basic colour terms, as all other types of colour
signs are either derived (type 1 and 2) or non-native (type 3 and 4). Yet,
arbitrary colour signs are rare in sign languages and tend to refer to colours
low on the hierarchy, e.g. the signs PURPLE and BROWN in NGT. Comparing
sign languages, the first three colours in the colour hierarchy are frequently
expressed by pointing at or touching an appropriate body part. Thus, 'white'
is indicated by pointing at the teeth or a region of non-tanned skin, 'black'
by pointing at the hair or eyebrows and 'red' by pointing at the lips. This is
the case in large sign languages like in Chinese Sign Language and Ugandan
Sign Language, in sign languages of communities with a high incidence of
hereditary deafness like Ban Khor Sign Language (in Thailand, Nonaka,
2004), and in some home sign languages (Yau, 1992). As the pointing and
touching of body parts is intended to indicate the colour typically associated
with that body part, these colour signs are derived and thus, strictly spoken,
not basic colour terms. The fact that arbitrary signs are used for colours low
in the hierarchy and motivated signs for colours high in the hierarchy
suggests that the definition of basic colour term needs reconsideration in the
context of sign languages.[28] Although the definition of basic colour terms is
not entirely suitable for sign languages, the correlation between colour signs

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[28] However, the contemporary status with regard to motivation of colour signs
derived from pointing and touching signs is debatable. Stokoe (1987) and Nonaka
(2004) point out that in ASL and Ban Khor Sign Language, the signs for 'black' and
'red', though originally referring to coloured entities, have lexicalised and are now
formally distinct from a referential pointing at the coloured entity.

and their motivation does reflect the internal order of the colour hierarchy. Thus, when we group the colour terms of a sign language according to their motivation, the colour terms with the same motivation generally refer to colours adjacent in the colour hierarchy. In a sign language with two types of colour signs, one group contains the colours high on the hierarchy, the other group the colours lower on the hierarchy. For example, in French Sign Language, Chinese Sign Language, and American Sign Language, the first three colours, white, black and red, are not initialised, whereas the other colour terms are (Yau, 1992). The home sign systems of the isolated deaf persons studied by Yau (1992:201) either have colour signs for the first two or three colours or no colour signs at all, in which case signers resort to type 2, that is pointing at a coloured entity in the environment.

Colour terms in AdaSL

AdaSL uses two types of colour signs. In spontaneous signing, the signs for white, red, and black occurred frequently. They form a lexical family as they have the same manual sign, distinguished by mouthings. Thus, the three colours highest on the hierarchy are of type 3 in the typology above.

Fig. 3.1 WHITE   **Fig. 3.2** BLACK   **Fig. 3.3** RED

The mouthings are derived from the Akan words for the three colours.

(3.1) | **Sign** | **Mouthing** | **Akan colour adjective** |
|---|---|---|
| white | [ftftft] | *fitaa* |
| black | [pursed lips] | *tun(tum)* |
| red | [ɔ:] | *kɔkɔɔ* |

In (3.1) above, the Akan colour words on which the mouthings are based are given in the last column. As noted earlier in the discussion of Akan colour terms, these words may be intensified by an expressive reduplication. The mouthing of BLACK seems to be derived from –*um*. The mouthing of RED

seems to be derived from the vowel of *kɔ*. Both mouthings are not dynamic and stretch over the colour sign. The mouthing of WHITE in AdaSL is dynamic and seems to be a reduplication of the consonants of Akan *fita*. This reduplication may be the result of the reduplicated motion of the hand. Alternatively, the mouthing is based on a reduplicated, expressive form in the spoken language. Expressive forms in general are relatively often accompanied by gesturing (Kita, 1997) and may thus be more prone to borrowing into a sign language than non-expressive forms. The signs WHITE, BLACK, and RED themselves can be modified by repeating and intensifying their movement, rendering intensified meanings as 'very black' or 'very white'.

The association between the manual sign and the mouthing is not absolute, as both show autonomous behaviour to some extent. The manual sign is also found in non-colour combinations: combined with a wrinkled nose it means 'bad smell', combined with a wiggling tongue, it means 'sweet', or 'sugar'. Without a facial activity, the manual sign is meaningless. The manual sign thus seems to be a general sign of 'sense', rather than of 'colour'. This general sense sign needs to be specified by a non-manual element: a mouthing, a mouth gesture or a facial expression.
The colour mouthings in turn are not confined to appearing with this general sense sign. They are found in conventionalised combinations with 1) a size and shape specifying S hand denoting a roundish, lumpy shape (see §4.3.6) and 2) a sign glossed as SURFACE (see also Nyst, 2006). Thus, a size and shape specifying S hand, wiggling in front of the mouth, means 'garden egg' (a white, round aubergine species) when combined with the mouthing for 'white' (Figure 3.4), but 'tomato' when combined with the mouthing for 'red' (Figure 3.5), literally something like 'white lump', and 'red lump' respectively.

Fig. 3.4 GARDEN EGG   **Fig. 3.5 TOMATO**

Examples of colour mouthings in combination with SURFACE (a B hand making a striking motion) are the signs SURFACE:BODY:RED (Figure 3.6), SURFACE:BODY:BLACK, OLD-PERSON (Figure 3.7), and FOREIGNER (Figure 3.8).

Fig. 3.6 SURFACE:BODY:RED FIG. 3.7 OLD PERSON Fig. 3.8 FOREIGNER/ACCRA

Locating SURFACE on the body plus the mouthing for 'red' indicates a light complexion.[29] The same sign, with the mouthing for 'black' instead of 'red', indicates either a dark complexion or black outfit. For example, the compound sign POLICE consists of STRIPES-ON-TROUSERS followed by the sign SURFACE, which is located on the body and accompanied by [pursed lips], the mouthing of BLACK. The sign OLD-PERSON is made by striking the side of the head and mouthing 'white'. Striking the SURFACE sign over the top of the head plus the mouthing of RED means 'foreigner/white person' or 'Accra', the capital of Ghana, as this is the place in Ghana where most white people are found (see §3.5).

In short, the signs for 'white', 'red', and 'black' have a number of morphological possibilities. They may be modified for intensification. Their mouthings are quite autonomous. Together with a meaningful location and/or orientation, the mouthings add to or specify the meaning of semantically light manual signs like SENSE, SURFACE, or a Size and Shape Specifying S hand (see §4.2).

Whereas the signs for white, black and red were frequent in spontaneous signing, other colour signs were elicited by showing colours and asking the signers to provide a sign. At least two colour signs are based on the sign for an entity bearing the relevant colour, as in type 1 in the typology of colour signs. These "derived" colour signs are not marked for being a colour sign. For example, signs for 'yellow' are FAT CHICKEN or BANANA SOFT. The former sign is semantically identical to *akokɔ sradeɛ*, an

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[29] The use of the sign for 'red' to refer to a light complexion parallels the use of the term *kɔkɔɔ* or 'red' in spoken Akan, where it is used to refer to a light complexion as well.

Akan word for yellow that literally means 'chicken fat'. Signs for green are
LEAVES or BANANA HARD. Both signs correspond to the Akan words for
green, which refer to unripeness or freshness and to leaves. Whereas little to
no variation was found in the signs for 'white', 'black', and 'red', signs for
yellow and green did vary between and in signers. Whereas the first three
colour signs can be intensified by modification of the movement, signs for
'green' cannot. The sign LEAVES/GREEN needs the sign BLACK to intensify
its meaning as well as to denote distribution over a surface. To say 'very
green', the intensified version of BLACK is added: LEAVES BLACK:INTENSE
To express that a surface is green, the mouthing of BLACK, [pursed lips],
accompanies the SURFACE sign. This lack of conventionalisation disqualifies
the signs for YELLOW and GREEN as basic colour signs.

   No separate signs were found for 'blue', 'purple', 'grey', or 'brown'.
These colours are included under the colour terms mentioned above,
depending on the quality of the colour. Thus, the colour grey is covered by
either the sign WHITE (as in the case of grey hair) or the sign BLACK (for
example in the case of a grey sky). Adding the sign SHADE indicates that the
colour of the entity corresponds only approximately to the colour expressed
by the colour sign. It functions like the '-ish' morpheme in English 'reddish',
expressing the meaning 'more or less red' and deriving less prototypical
colours from basic colour terms. Thus, RED SHADE means 'reddish, orange'.
One signer had a sign for 'multicolour'; to indicate a spotted body, he used a
clawed five hand repeatedly contacting the chest at several locations. This
sign, however, was not recognized by the bilingual consultant and may be a
borrowing from GSL. There was quite some variation in the way GOLD was
signed, but in all cases it contained a sign for EARRING or BRACELET, which
was sequentially combined with the sign RED or RED-SURFACE, or with a
sign representing glittering or twinkling (an opening 8 hand).

   We can now relate the colour terminology in AdaSL to the
discussion of the universality in colour terminology and the general
observations about other sign languages. AdaSL has colour signs with
mouthings (type 3) and derived colour signs (type 1), but no arbitrary colour
signs. The signs WHITE, BLACK, and RED are clearly more basic than the
derived colour signs, as these three signs show little variation and can inflect
for 'intense'. The derived colour signs, like e.g. the signs for 'yellow' and
'green' are less basic, judging from their variability as well as their inability
to inflect. According to the strict criteria of Berlin & Kay (1969), AdaSL,
like most sign languages, has no basic colour terms. Yet, the grouping of
colour signs based on their motivation (mouthing or derivation) is in line
with the implicational hierarchy described by Berlin & Kay (1969), as in
most other sign languages. These findings suggest that the criteria for
basicness in colour terms need modification in the case of sign languages.

Having lexical signs for a number of colours, AdaSL patterns more closely with large sign languages than to – at least some – home sign languages. The colour system corresponds closely to the Akan colour system. Derived colour signs have the same semantic base as in Akan. Akan has a borrowed term for 'blue'; AdaSL has no sign for this colour. Unlike Akan, AdaSL has no sign for 'brown'. An interesting feature of the mouthings of WHITE, BLACK, and RED is their relatively autonomous behaviour in that they may combine with several, semantically light, manual signs.

3.3. Kinship terms

3.3.1. Universals in kinship terms

Similar to colour terms, universal patterning across languages has been found in kinship systems and their terminology. Variation in kinship systems, classified according to the terms used for the father of Ego (the person from whose perspective the kin terms are given) and his/her uncles from paternal and maternal side, is limited to four types. Linguistically, categories differ in the number of distinctions, e.g. relative age or gender, that can be made (Greenberg, 1990). For example, more distinctions are made in lineal kin (the parent-child line), than in non-lineal or collateral kin (siblings, cousins, etc.). In general, the closer the kin category is to Ego, the more distinctions can be made. Categories cross-linguistically allowing a high number of distinctions are considered unmarked, whereas categories allowing a low number of distinctions are considered marked. Across spoken languages, the (vocative) terms for close kin are found to show some similarity in form, which is generally ascribed to their ultimately originating in baby-talk.

3.3.2. Kinship terms in Akan

The Akan kinship system has one term for both ego's father as well as the brothers of ego's father, i.e. his paternal uncles. Akan has a separate term for a maternal uncle and a paternal aunt. In some contexts a woman's son is equated with her brother (Thomas, 1980). It has one term for grandparent, with no gender distinction; the same term, but with a different tonal pattern, refers to grandchild (Foley, 1997, Lounsbury, 1964).

3.3.3. Kinship terms in sign languages

Comparing kin terminology in 20 sign languages, Woodward (1978) claims that signed kin terms follow the universals established by Greenberg. However, the analysis in this study is not entirely convincing, as it is based

on Woodward's notion of 'basic kin term'. This term is not used in kinship studies, but seems to have been created in analogy to the notion of 'basic colour term' as discussed in §3.2. Thus, kin terms involving non-native elements such as mouthings and initialisation are excluded from the analysis. Following these criteria, three sign languages -Scottish Sign Language, British Sign Language, and Australian Sign Language- do not have a basic kin term for one of the most unmarked categories, the lineal father. In contrast, they do have terms for collateral relatives, as far as aunt, uncle, and cousin. As such, these three sign languages run counter to Greenberg's universal stating that more distinctions are made in categories closer to Ego, i.e. in the lineal kin. However, these deviations reflect a deviation in methodology, rather than a deviation in the organization of kin terminology in these sign languages.

In sign languages, kinship signs typically have only a referential and no vocative function. Related to this is the observation that the terms for close kin do not resemble each other across sign languages as they do in spoken languages as the result of baby-talk. Whereas (vocative) terms for close kin such as father and mother, such as Dutch *papa* and *mama* respectively, often have a form that is easily pronounced by very young children and seem to have originated as babbling, this is not the case for these terms in sign languages.

3.3.4. Kinship terms in AdaSL

In the analysis of the AdaSL data, all signs with kinship meanings are treated equally, that is no distinction is made between basic and non-basic kin terms. Lineal kin terms in AdaSL, ordered from old to young, are:

Grandparent: the fingers strike the hair above the ear, accompanied by the mouthing for WHITE, thus 'grey-hair' (see Figure 3.7). The primary meaning is 'old person' and the sign is glossed OLD-PERSON.

Mother: S hand contacts the chest twice. In a variant form of the same sign, a B hand makes a sawing movement on the chest. The general, but not necessarily primary meaning of the sign is 'woman'. The form with the B hand does have a primary kinship meaning.

Father: Three signs are in use: 1) the S hand contacts the chin with the radial (thumb) side, 2) the lax hand contacts the chin with the radial (thumb-) side, or 3) the bO touches and closes on the chin. The signs have the more general meaning of 'man'. There seems to be some variation as to when which form is used. The last sign, with the Closed 1 hand, is more used in communication with non-signers. The lax hand is probably the eroded variant of the form with the S hand. Whereas the eroded form of WOMAN primarily has a kinship interpretation, such a shift of semantic focus is not found in MAN.

Child: the lower arm held vertically and the S hand represents the body and head of a child respectively (Figure 3.10). The sign can be modified for plural, but also for height, showing the height of a person on the 'growth line' (see §4.3.3). The sign can again have a general or a kinship interpretation, that is, 'child' in the sense of a person who is not yet adult in general, or 'child' as a kin term, in the sense of somebody's offspring. Whereas AdaSL uses one term for both interpretations, similar to English 'child', Akan differentiates the two: *abofra* and *ɔba* respectively.

Offspring: an S hand moves downwards along the belly, which is glossed as BIRTH.
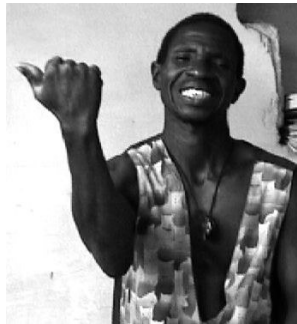
Fig. 3.9 SAME   **Fig. 3.10** CHILD

Fig. 3.11 YOUNGER SIBLING   **Fig. 3.12** MARRY

Non-lineal kin terms in AdaSL are:

Sibling: a V hand shakes in space. It is accompanied by the mouthing [fff], probably related to the Akan word for 'same', which is *fɛfɛɛfɛ* (see Figure 3.9). The sign can refer to siblings, cousins, and friends. Thus, the term merges collateral kins (siblings) with parental collateral off-spring (cousins) as well as not related age mates. The primary meaning of the sign is SAME.

Younger sibling: a B hand makes a sweeping movement towards the back of the body (Figure 3.11). This may be a generic directional sign as discussed

in §5.4.2, meaning 'coming from behind me'. In Akan, the word for 'younger sibling' is *akyiba*, which also contains the morpheme *akyiri* 'later' or 'back'; the latter part comes from *ɔba,* 'child'.

Marriage partner: an S hand moves forwards in space (see Figure 3.12), glossed as MARRY.

Family: two 1 hands describe a semi-circle in space, meeting each other at the fingertips. The sign was given as the translation of the GSL sign for 'family'. The meaning of this sign is something like 'together, union, the same'. Whether the sign is actually used as a kin term and for what category of kin relation has not become clear.

Lineal kin			Other
GRANDPARENT			MARRY FAMILY
FATHER	MOTHER		
SIBLING	EGO	YOUNGER SIBLING	
	CHILD & BIRTH		

Table 3.2 Kinship terms in AdaSL

For most of the above signs the kinship meaning is not the primary meaning. Thus, the primary meaning of the sign used to mean 'mother' is 'woman'. Similarly, 'man' is the primary meaning in the case of the sign for 'father', 'same' in the case of 'sibling/cousin/friend', and 'old person' in the case of 'grandparent'. Two kinship signs are mainly used to denote an activity. When they are used to denote an entity, they typically have a kinship interpretation. Thus, AdaSL has one sign for 'marriage partner', which is the same as the sign MARRY. In the same vein, the sign BIRTH may be interpreted as 'giving birth' or 'offspring'. A signed phrase like 'BIRTH WH-QUESTION' can thus be interpreted as 'how many times did you give birth?' or 'how many offspring/children do you have?'. The only sign with a primary kinship reading is YOUNGER SIBLING.

Only two kin signs are specified for gender: FATHER/MAN and MOTHER/WOMAN. Other kin signs are neutral in gender and may be specified by adding FATHER/MAN or MOTHER/WOMAN. Specification for relative age is only found in YOUNGER SIBLING. Relative age can also be expressed for offspring and siblings by using a paraphrase including the sign for CHILD at a relative high (for elder) or low (for younger) location on the growth line, like BIRTH CHILD-high versus BIRTH CHILD-low, for elder and younger child, respectively (see §4.3.3). Another way of referring to an elder child is with

the sign ELDER, the generic sign that can be interpreted as 'adult', 'elder', 'first-born', 'chief' and 'Monday'.

Out of the twenty signed languages compared by Woodward (1978), AdaSL and Providence Island Sign Language are classified in his study as not having undergone influence of an oral language. In contrast, the present study shows an influence of Akan on the AdaSL kin terms in the form of the mouthings of OLD-PERSON and SIBLING, and in the form of the possible loan translation YOUNGER SIBLING. In Woodward (1978), AdaSL and Providence Island Sign Language are claimed to have the same set of kin terms: MOTHER, FATHER, CHILD and RELATIVE which is probably the sign here glossed as SAME/ SIBLING. The present study shows that in addition to these four signs, AdaSL has the terms GRANDPARENT, YOUNGER SIBLING, BIRTH, MARRY and FAMILY. Compared to the spoken Akan terminology, the AdaSL set of kin terms is restricted, as no separate terms are found for maternal uncle, paternal aunt or for their off-spring. No sign was found for the overarching matrilineal affiliation of *abusua*. Summarizing the properties of the AdaSL kinship system, we see that it is strongly generation-oriented. Thus, three generational levels are distinguished: children, parents and grandparents. A gender distinction is exclusively found in the lineal parents (FATHER and MOTHER). According to Greenberg's approach, the categories of 'father' and 'mother' are thus unmarked as compared to other categories. This distribution is in line with the cross-linguistic finding that lineal kinship categories and categories generationally close to Ego are unmarked. Kinship signs are only found for consanguine kinship categories, with the exception of MARRY. There is a merger of collateral kins (siblings) with parental collateral offspring (cousins) and unrelated befriended peers. A relative age distinction is made in siblings, but not in children. Thus, the more specific term YOUNGER SIBLING may be used instead of the term SAME, which is unspecified for age. Making a distinction in a collateral category that is not made in the corresponding lineal category goes against Greenberg's claim that lineal kin is more unmarked than collateral kin. Interestingly, the sign YOUNGER SIBLING is the only sign with a primary kinship interpretation. It is surprising that more unmarked categories, such as 'father' and 'mother' do not have a primary kinship meaning, but instead are extension of signs with a more general meaning, in this MAN and WOMAN respectively.

3.4.   Counting & monetary terms

3.4.1. Universals in number systems

Greenberg (1978) identified tendencies and universal patterns in spoken language numeral systems. Thus, higher numbers are more often based on

addition and multiplication of lower numbers than on subtraction and division. Cardinals are less marked than ordinals and lower numbers are less marked than higher numbers. Multiples of the base of the numeral system, e.g. 70 in a decimal system, are less marked than other comparably high numbers, e.g. 71.

3.4.2. Numbers in Akan

The Akan numeral system is decimal and has twelve primary numerals, which are all nouns: these are the numbers one to ten, hundred and thousand. All others numbers are combinations of these twelve numerals. Akan has no nouns for ordinals. Instead, it uses verb phrases with meanings like *di kan* 'to be first, go in front', or *di akyiri* 'to occupy the back-part' to express 'first' and 'last', respectively.

3.4.3. Numbers in sign languages

A small number of studies were found that describe the numeral system of a sign language, including Fuentes & Tolchinsky (2005) for Catalan Sign Language, Bouchard & Parisot (2004) for Quebec Sign Language and Massone (1991) for Argentinean Sign Language. Anderson (1979) has written cross-linguistic study on numeral systems in sign languages, but it was not available to be considered in the present study. Katseff (2004) describes the development of the numeral system in Nicaraguan Sign Language as moving from being two-handed and iconic to being one-handed and more arbitrary. Fischer (1996) reconstructs the historical development of numerals in ASL, arguing that they originate partly from numerals in Langue des Signes Française and partly from American conventional gestures. A property of numbers commonly reported for sign languages is their ability to be incorporated in other signs (Chinchor, 1985; Liddell, 1997 for ASL; Bouchard & Parisot, 2004 for Quebec Sign Language and Massone, 1991 for Argentinean Sign Language). For example, in Sign Language of the Netherlands number handshapes may be incorporated in the sign for GULDEN, the former currency of the country. Also, at least some large sign languages, e.g. ASL and NGT, use what Liddell (2003) calls 'list buoys', whereby the fingers and their order provide ordered loci on which referents are projected.

3.4.4. Numbers in AdaSL

In this section a description of the number system in AdaSL is given. This description is evaluated mainly with respect to the cross-linguistic tendencies identified by Greenberg (1978) and the Akan numeral system. Intertwined in

AdaSL with the numeral system is the monetary system, which is described here as well.

AdaSL has a cardinal system, but no ordinals. It has primary numerals for the numbers one to ten, for twenty and an operator to construct multiples of ten. All other numbers can be composed on the basis of these primary signs. The signs for one to five are one-handed, those for six to ten are two handed. All are located at default locations in neutral signing space, to the right at chest height for one handed signs, in the centre for two-handed signs. There is no sign for zero in AdaSL. As far as the numbers up to ten are concerned, the number signs are quite consistent in form between signers. More variation was attested in the numbers above ten.

ONE   TWO   THREE-A THREE-B   FOUR   FIVE
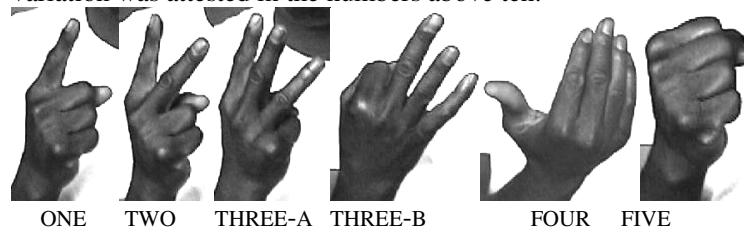
Fig. 3.13 The numbers one to five in AdaSL

Figure 3.13 shows the AdaSL numbers for one to five. These may be formed by adding one finger at the time, starting from the index. There are two ways to sign 'three'. In THREE-A, the index, middle and ring finger are extended. In THREE-B, the middle, ring and little finger are extended (see Figure 3.13). Though 'four' can be signed by extending and spreading the four fingers, the more common sign for 'four' has four adducted fingers. To sign 'five' all fingers including the thumb may be extended. An alternative and more frequent sign for 'five' is holding up an S handshape as in Figure 3.13. An S hand for 'five' is found in sign and gesture in other parts of Africa as well, e.g. in the sign languages of Uganda and Tanzania. The sign FIVE is a base in the AdaSL numeral system, as the numbers from six to ten are formed by addition to FIVE (see Figure 3.14).

SIX   SEVEN   EIGHT   NINE   TEN

Fig. 3.14 The numbers six to ten in AdaSL

In SIX, SEVEN and NINE the dominant hand holds one, two or four fingers of the non-dominant hand respectively, thus 5 + 1 for 'six', 5+ 2 for 'seven',

and 5+ 4 for 'nine'. Interestingly, the handshape representing '1' in SIX has an extended little finger, contrasting with an extended index finger in the sign for ONE. Similarly, the handshape representing '2' in the sign for SEVEN has a different handshape than the actual sign for TWO. The numbers SIX and SEVEN are phonologically unusual. The extension of little finger in the non-dominant hand of SIX is found in only two signs in AdaSL. The extension of the little finger and the ring finger as in SEVEN is only found in this sign. Cross-linguistically, as well as language-internally, the handshapes of the non-dominant hand in SIX and SEVEN seem to be marked. As such, these two signs run counter to the Dominance Condition as proposed by Battison for ASL (1978; see §2.4.3), which states that in signs with two dissimilar handshapes, the non-dominant hand is selected from a small set of unmarked handshapes. The only other sign with extension of the little finger only is MS:little-finger. This is a measure stick sign, most of which are not in line with the Dominance Condition either (see §4.3.4). The number ten is formed by doubling the S hand for 'five'. This form of TEN has a variant with B hands. The only sign in this row that is not based on 'five' is EIGHT, which is a doubled version of FOUR. The numbers six to nine are normally produced with the palm oriented upwards. When asked to count, one signer rendered these signs higher up in space, in front of the forehead, with the palms turned away from the signer. It is not clear what the status of this variant is. The numbers from one to ten are often accompanied by mouthing of the Akan equivalent. With two signers, English mouthings were attested as well, which are probably borrowed from GSL (see §1.3.4).

Numbers above ten are formed by addition, e.g. TEN ONE for 'eleven', which has the same order as in Akan. TWENTY can be signed in various ways. The sign TEN, made with B hands, can be followed by the two B hands or S hands contacting the upper legs (Figure 3.15, first and second picture). One seated informant folded her body to move both hands to her feet to indicate 'twenty'. For additional multiples of ten, the hands move to the side after every repetition of TWENTY, as if putting the tens aside, illustrated as TOWARDS:ASIDE in Figure 3.15 (third picture). Thus, THIRTY was signed as TEN (B hands) TWENTY ^TOWARDS:ASIDE-repeated THREE. Although it seemed an unusual activity for the consultants, signers could continue counting this way up till hundred. From hundred on, signers would start writing numbers in the air, or they would switch to the monetary counting system. The execution of tens and the variation in it is clearly iconically motivated. Yet, the numbers 6, 7, 8, and 9 are conventional and not entirely iconically transparent.

| TEN | TWENTY | TOWARDS:ASIDE |
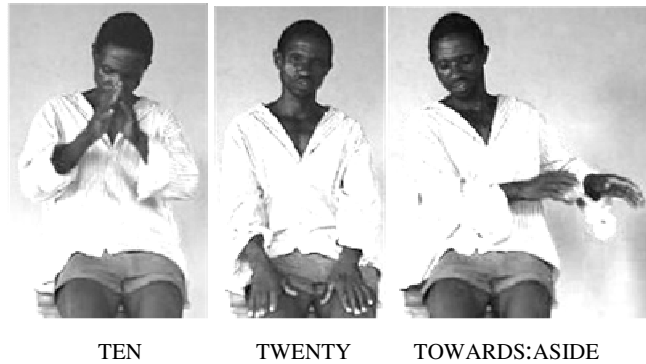
Fig. 3.15 TENS

The counting of higher numbers was an unusual exercise probably due to the fact that these numbers are usually only referred to when talking about money. The extreme devaluation of the present Ghanaian currency, the cedi, has resulted in large denominations, easily running into hundreds and thousands of cedis. Therefore, to talk about multiples of ten, hundred, and thousand, signers switch to the monetary counting system which basically consists of the number signs discussed above in combination with special signs for specific denominations, mostly related to coins or notes.

Denomination in cedis	Sign	Etymology
₵50	COIN	the smallest coin commonly used
₵100	HALF	cut/half a 'kotoku'
₵200	KOTOKU	bag
₵2000	RED	red note
₵5000	BLACK	green note (green is signed as BLACK here)
₵1.000.000	BUNDLE	bundle of notes tied with a cord

The basic unit in most money counting is 200 cedis, signed as KOTOKU (see Figure 3.16). The sign KOTOKU is derived from the sign for 'bag', an unbalanced sign, in which one B hand moves to the other. Using the sign for 'bag' for 200 cedis is a loan translation from Akan. *Kotoku*, an ancient loan from Manding (Wilks, 1962)[30], is the Akan word for 'bag' and appears to be

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[30] The word *kotoku* probably spread in the time that Malinke traders came to Ghana as part of the gold trade between Ghana and Northern Africa, according to Wilks (1962). It is found to mean 'bag' in other coastal languages like Ewe and Gã in Ghana (Akrofi et al., 1996), Guan in Togo (Westermann, 1933), and Gungbe in Benin (Enoch Aboh, p.c.). Thanks go to James Essegbey, his mother-in-law, and

an obsolete term for 200 cedis as well (James Essegbey, personal communication). The status of KOTOKU or 200 cedis as a base in the AdaSL system is related to the colonial pound. A hundred pounds was once referred to by speakers of Akan as one 'kotoku'. When it was introduced, the cedi was worth half a pound. A hundred pounds or one 'kotoku' thus equalled 200 cedis. Whereas nowadays for many Akan-speakers the unit of 200 is no longer the base since they use the English terms for the denominations, the old system is preserved in AdaSL, as AdaSL signers continue to count with 'kotoku' or 200 cedis as a base.

The sign KOTOKU can be modified by general number signs. Some signers take this basic unit for granted and leave it out when talking about money, exclusively signing the modifying number sign; e.g. 'HALF', instead of 'KOTOKU HALF' for 100 cedis.

Fig. 3.16 KOTOKU

To express specific denominations the units HALF (100 cedis), KOTOKU (200 cedis), RED (2000 cedis), or BLACK (5000 cedis)[31] are used, where necessary multiplied by a general number sign. For example, 6700 cedi is signed as BLACK ONE KOTOKU EIGHT HALF (i.e. 5000 + (200 x 8) + 100).

It is not clear to what extent the basic money signs may incorporate number signs in AdaSL. In the data, a few money signs were found with number handshapes. As they were adjacent to number signs, they may have been the result of assimilation. Money signs with number handshapes were found in the two phrases below:

KOTOKU TWO(V hand) HALF(V- instead of B hand)   '500 cedi'
KOTOKU(1 hand instead of B hand) ONE(1 hand)   '200 cedi'

Enoch Aboh for helping in the search for the spread of the word *kotoku*.
[31] Sometimes the sign CROWN is used to denote 5000 cedi. The motivation of this sign is not clear to me.

The fact that numeral incorporation in basic money signs is hardly observed in AdaSL is not surprising, given that number incorporation in other parts of the language, such as in time terms or personal pronouns, also seems to be rare or absent in AdaSL. Only one incidence of number incorporation in a productive form was found, represented in (3.2) below. The last five signs of the fragment, containing the incorporated number handshapes, is illustrated in Figure 3.17. In this example, an unjust payment of wage after labour is discussed. Three signs contain a number handshape that are combined with a movement in a particular direction and location. These are FOUR:3SG, TWO:IN-POCKET, and TWO:3SG. Two analyses are possible for these three signs. They may actually be considered as incorporations of a number handshape in another sign, for example a directional. Alternatively, they may be analysed as spatially modified forms of the standard number signs.

Fig. 3.17 TWO   **FOUR**   **FOUR:3SG**

TWO:IN-POCKET   **TWO: 3SG**

$$\overline{\hspace{3cm}}\text{hesitate}\quad\underline{\text{neg}}$$

(3.2)   MONEY BLACK FOUR DISTRIBUTE FINE.   TWO FOUR FOUR:3SG
TWO:IN-POCKET TWO: 3SG

> 'There were four notes of 5000 cedis. He should have given each
> one note, that would have been fine. Instead, he hesitated to hand out
> the four notes. 'No', he decided. He put two of the notes in his
> pocket and gave two to them.'

Even in lexical signs the V handshape of the sign for 'two' rarely has this
meaning. It was only found as such in the sign FOLLOW and in the sign
SAME/SIBLING.

Another usage of counting in sign languages are 'count buoys',
whereby a specific number of fingers is extended and referents, related in a
specific order such as siblings, are projected one by one on the extended
fingers (Liddell, 2003). Such count buoys were not observed in AdaSL.

3.4.5. Summary

In sum, the AdaSL numeral system has as its basic units five and ten, except
EIGHT, which is based on FOUR. All numbers are constructed by addition or
multiplication. This reflects the preference for addition and multiplication
over subtraction and division in languages of the world. AdaSL has cardinal,
but no ordinal numbers, which is in line with the universal that ordinals are
more marked than cardinals. Numbers above five are two-handed. Variation
is found in the execution of tens. Yet, the system is conventionalised to the
extent that there is little variation in the numbers from one to ten and the
handshapes are not entirely transparent. As such, AdaSL resembles both the
first and second cohort of Nicaraguan Sign Language users described by
Katseff (2004). No hard evidence is found for numeral incorporation in
AdaSL, whereas this seems to be a common phenomenon in the large sign
languages studied so far. Similarly, 'list buoys' as used in ASL are not found
in AdaSL. Numbers above hundred are generally only used in the context of
money. The monetary counting system has preserved the colonial pound as a
basic unit, whereas hearing Akan culture has not. Lacking data on sign
languages in general, but especially on sign languages other than those with
a large Deaf community, similarities and differences with the latter type of
sign languages cannot be identified.

3.5.   Time terms

No universals have been postulated for the expression of time in languages
around the world. Yet, there seems to be considerable cross-linguistic

similarity in the expression of time in large sign languages, in contrast to sign languages with no stable group of deaf users (as discussed in §3.5.1). Again, the expression of the semantic field in Akan is considered as well (§3.5.2), as this is the dominant spoken language in Adamorobe, potentially influencing the expression of time in AdaSL. In §3.5.3, the expression of time in AdaSL is described and discussed.

3.5.1. Time in sign languages

The large sign languages studied so far make extensive use of both relative and absolute time adverbials to locate events in time (see e.g. Zeshan, 2000:91 for Indo-Pakistan Sign Language, Sutton-Spence & Woll, 1999 for British Sign Language). Relative adverbials are often positioned on 'time lines'; tiers that run from one side to another, relative to the body of the signer. Positions on such a tier correspond with positions in time. A well-known time line for Western sign languages is the line that runs from the back of the body over the shoulder to the front (e.g. Brennan, 1983; Schermer & Koolhof, 1990). Signs positioned on or signed towards the part of the line back of the shoulder refer to the past, whereas signs in the front part refer to the future. The position on the line just in front of the shoulder refers to the present. This particular partitioning is the result of a common metaphor connecting 'back' with 'past' and 'front' with 'future' (Lakoff & Johnson, 1980). Such metaphors, however, are culture-specific. In the sign language of the Urubu-Kaapor of the Brazilian Amazonia, as well as in Japanese Sign Language, signs with a future connotation are signed to the back and those with a past connotation are signed to the front (Kyle & Woll 1985:144). Placing the past in front and the future back of oneself is based on the metaphor 'the past is what we have seen; the future is not visible yet'. In the home signing of seven isolated Native American and Chinese deaf adults, Yau (1992) finds no usage of time lines.

3.5.2. Time in Akan

Akan culture has several temporal systems, which are used alongside systems of foreign origin, depending on context as well as personal background. The Akan year is organised in 8 or 9 cycles of 40 days (the ritual calendar), and weeks in days as well (Adjaye, 1987; Wilks, 1992). The Akan year starts with an important festival. In the case of Adamorobe, this is the *Odwira* festival, which celebrates the yam harvest. Each month has a name, related to the agricultural activity typical of that month. The original Akan month has a cycle of forty to forty-two days, which each have their own name. This monthly cycle organises the performance of rituals. The year is also subdivided in larger seasons, such as the big rains and the small

rains. The Akan week has seven days. In traditional settings, the week is counted inclusively and is therefore sometimes called *ndawotwe*, or 'eight days'. Each day of the week is ascribed to a spirit force or *kra* and carries the name of it. Thus, Friday is the day of Efi, hence *Fiada*, literally 'Efi's day'. The names of the *kra* of each weekday name are the basis of the personal weekday names discussed in the following section, §3.5 on names. A day is divided in smaller time spans, which often make reference to the sun, e.g. *awia-pue-bere*, literally 'sun-come out-time' *awia-gyinae*, literally 'sun-stand', and *awia-to-bere*, 'sun-set-time'. In addition to spoken lexical items, speakers of Akan use conventional gestures to refer to time, for example to express 'a long time' or 'now'. Gyekye (1995) argues that Akan culture conceptualises the past as lying in front of a person and the future as lying behind. The data on AdaSL will be mainly compared with Akan lexical items as well as with conventional gestures used by hearing Akan people.

3.5.3. Time in AdaSL

In this section, expressions of time in AdaSL are described. Firstly, the usage of timelines in AdaSL is considered. Secondly, the lexical time adverbials found in the data are presented. These may either make use of a timeline or of other strategies. Lastly, the signs for the days of the week and their etymology are discussed.

A subset of time adverbials makes use of time lines. Two time lines are discerned; the growth line and the celestial line. The growth line is represented by arrow A in Figure 3.18. The celestial line is an arced line up in front of the signer, as illustrated by arrow B in Figure 3.18. Time signs signed on this line make reference to the position and/or arced path of the sun and the moon, as in the signs DAY (Figure 3.19), MOON/MONTH, SUN/NOON, EVENING, and A-WHILE.
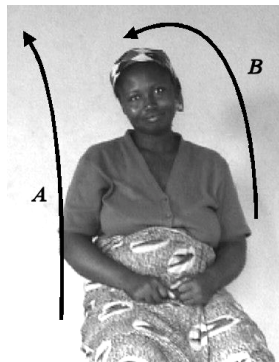
Fig. 3.18 Time lines in AdaSL

Fig. 3.19 DAY   **Fig. 3.20 A-WHILE**

DAY: traces the arced time line with a 1 hand (see Figure 3.19). The meaning of this sign is quite variable. It is sometimes used to mean 'day', sometimes as 'month', and sometimes as 'year'. Addition of the sign to other time terms can give a past interpretation, as 'ago'.

MOON: follows the arced line with an X hand or an S hand.

SUN: a clawed 5 hand directed towards the upper part of the arc. This is also used as a temporal term referring to the hottest part of the day, equivalent to Akan *awia*(*gyinae)*, literally 'sun (stands)'.

EVENING: the B hand points at the horizon, indicating a low position of the sun.

A-WHILE: the fingertips of the B hands, palms out, are pointed upwards, a modified form of WAIT, while the eyes are looking up at the sky. The sign is typically followed by a form of either COME or GO, giving meanings like 'he will come soon', or 'wait a bit and (the car) will go'

Reference to the position of celestial bodies for expressing time is found in other sign languages as well, both in those of communities with a high incidence of deafness as well as in those of large Deaf communities.

The second time line in AdaSL (arrow B in Figure 3.18) is what has been called the 'growth line' for other sign languages, e.g. NGT (Schermer, Fortgens, Harder & de Nobel, 1991), indicating the height of a person or animal, see Figure 3.18. This line rather refers to the height and growth of entities over time than to time per se. Its use is described in Chapter 4 on size and shape, in §4.3.3.

The following signs denote time spans without employing a time line.

HOUR: represents hitting a bell and therefore seems a loan translation of the Akan word *dɔn*, which may mean 'hour' or 'bell'.

WEEK: This sign is very close to the sign for EIGHT (see Figure 3.14), but with an added upward motion. The sign may well be a compound of EIGHT and DAY, whereby the upward motion is a trace of the sign DAY. This

corresponds closely to the Akan word for week, which literally says 'days eight'.

YEAR: There are several ways of indicating a year. All of them are based on yearly occasions. The most commonly used sign is a compound YAM EAT or YAM ARC. This refers to *Odwira*, the annual yam festival. The sign YAM may also be accompanied by a mouthing that looks like Akan *afe*, meaning 'year'. Other signs used to refer to year are EASTER and CHRISTMAS. The year is divided in smaller parts by referring to agricultural activities such as planting the crops, using the term PLANT, and meteorological circumstances such as RAIN for the rainy season.

Other signs denoting relative time without employing a time line are:

NOW: 1 hand pointing to the ground in front of the signer. The sign may also mean 'here'. This is also a conventional gesture in the wider Akan culture.

SMALL: To express 'soon' one can use the sign A-WHILE, as described above, or the sign small (illustrated in Chapter 4 as Figure 4.12). The primary meaning of SMALL concerns size, but when followed by COME or GO, the sign is typically interpreted as referring to a short time, rendering meanings like 'he will come soon', or 'it will go in a short while'. SMALL in this context has a spoken equivalent in Akan 'ɛyɛ kakra', literally 'it is small', meaning 'soon, in a short while'.

TOMORROW: a B hand touches the temple, moves down and bounces up again. Often, the other hand, also with a B handshape, joins the sign halfway. The sign has probably emerged as a compound of SLEEP and MORNING, the latter itself being a compound of LIE-DOWN and GET-UP.

YESTERDAY: a B hand contacts the temple at the radial (thumb-) side. The etymology of YESTERDAY is lost, but the contact of the B hand with the temple gives us a hint that probably the sign SLEEP was once a compound part of this sign.

LONG-TIME-AGO: a dominant B hand strikes the radial (thumb) side of the non-dominant S hand. Whereas the sign for similar concepts in Western sign languages tends to employ the time line running over the shoulder, the AdaSL sign does not employ a time line. The sign is used as a conventional gesture with the same meaning by hearing Ghanaians.

Whereas there are lexical signs for the concepts of 'yesterday' and 'tomorrow', other days, weeks, months, or years in the future or past are referred to by phrases. Thus, to refer to a moment in the past or the future, a time unit sign may be followed by the appropriate number, as in (3.3) below.

(3.3)   (TODAY) DAY THREE
           'three days ago / in three days'

As noted, addition of DAY, but also of GO specifies a reference to the past, while addition of COME refers to the future. Since specification of the time

unit signs for past or future (except in the case of TOMORROW and YESTERDAY) is not common, this system is basically symmetrical. The past month may be referred to as MONTH ONE or as MONTH DEAD, a literal translation of Akan *ɔbosum awu*, 'a month has died'.

Let us now turn to the signs for the days of the week; the motivations of these signs have lost much of their transparency with time.

MONDAY: two S hands move downwards, palms first (see Figure 3.21). As noted earlier, this sign is homonymous with ADULT, ELDER, FIRST-BORN, CHIEF and looks very similar to STRONG/HEALTHY. Consultants suggested that Monday possibly is considered the first and thus the eldest day of the week. It is not clear whether Monday is actually considered the first day of the Akan week, so the etymology of the sign MONDAY is not clear as yet.

Fig. 3.21 MONDAY

Fig. 3.22 TUESDAY   **Fig. 3.23 WEDNESDAY**

TUESDAY: a B hand contacts the chin at the dorsal side of the hand (see Figure 3.22). The sign does not resemble any other sign than the sign for 'pig', but it is not clear how the two could be related.

WEDNESDAY: two 5 hands contact each other at the palm (Figure 3.23). According to an elder consultant, WEDNESDAY represents the clapping of the elder women during the ceremony traditionally held on a Wednesday to celebrate the first menstruation of young girls. Frishberg (1987) mentions the sign WEDNESDAY as having an unusual handshape, but it is not clear in what respect this would be the case.

THURSDAY: a bO hand makes a hammering motion, sometimes accompanied by a repeated opening and closing of the mouth (see Figure 3.24). On Thursdays, the people of Adamorobe are not supposed to work on their lands. Instead, they go the market in Aburi, where the farmers of Adamorobe usually sell their crops. They also take their cutlasses there for repair. The sign THURSDAY is said to refer to the straightening of cutlasses by blacksmiths.

Fig. 3.24 THURSDAY   **Fig. 3.25 SATURDAY**

FRIDAY: the index and the middle finger draw a line on the temple. On Fridays, children were religiously bathed and smeared with white clay or *hyire* on their forehead by a priest for protection. The sign FRIDAY, which also is the sign for 'white clay', represents the application of the clay on the forehead.

SATURDAY: a B hand touches the cheek twice (Figure 3.25). Hearing signers explain that the sign makes reference to *bɔ dua*, meaning 'to curse', which – according to my informants – involves a visit to a shrine and its priest, commonly done on a Saturday. The same sign may also mean YAM when used in ritual contexts, as yam is one of the common gifts to shrines during rituals. The sign is also used to refer to Adamorobe when contrasting it with Aburi, the related town (see §1.1), which suggests that Adamorobe is or was known to more frequently engage in this activity than others or to house an important shrine.

SUNDAY: two B hands, contacting each other at the pinky side, open up. This sign is borrowed from the GSL sign for BOOK and refers to the weekly religious service of Christian churches.

3.5.4. Summary

The data show differences and similarities in the use of time lines between AdaSL and sign language of large Deaf communities. Like home sign and Kata Kolok, AdaSL does not use the time line running over the shoulder from back to front. It does use the celestial time line, which forms an arc in the space high in front of the signer. This timeline is also attested in home sign and large sign languages, e.g. in ASL and Providence Island Sign Language (Washabaugh, 1986). Like NGT (Schermer & Koolhof, 1990), British Sign Language (Sutton-Spence & Woll, 1999) and probably other sign languages as well, AdaSL also makes use of the growth line described for large sign languages. This line is also used by hearing people in Ghana, which suggests that it will also be found in home signing. However, AdaSL time lines do not reflect the Akan conceptualisation of the past as lying in front of a person as argued by Gyekye (1995).

Other expressions of time show similarities with Akan time reference as well. This may be in a similar semantic structure or motivation of the expression, as in the case of 'week, 'small', 'a month ago', and 'sun/(after)noon', or in the form of mouthings, as in YEAR. Conventional gestures from the wider (Akan) culture have been adopted, for example in the case of LONG-TIME-AGO and NOW. Like spoken Akan, AdaSL divides the year in shorter periods referring to events typically associated with those periods, such as meteorological, cultural and agricultural events. Like spoken Akan and other sign languages, AdaSL divides the day in smaller parts based on the position of the sun. Whereas spoken Akan days of the week refer to *kra* or spirit forces, AdaSL names for the days of the week refer to rituals and events typically performed on that day.

3.6.   Names

3.6.1. Names in sign languages

Sign languages use personal and place name signs that are distinct from the (legal) names of persons and places in the dominant spoken language. The study of personal name signs in particular provides insights into their social function, Deaf identity, the history of a sign language and its community, and phonology. Members of large Deaf communities typically receive their first name sign from peers at the school rather than from their parents (Yau, 1992). Being bestowed a name sign is a first step towards inclusion in the

signing Deaf community. One person may have several name signs, and their usage may depend on context (Locker McKee & McKee, 2000). Numerous studies on name signs in diverse sign languages show that there is variation between sign languages as well as within sign languages in the strategies used for coining name signs (see Meadow, 1977; Supalla, 1992; and Mindess, 1990 for ASL; Hedberg, 1991 for Swedish Sign Language; Desrosiers & Dubuisson, 1994 for Quebec Sign Language; Nonaka, 1997, for Thai Sign Language; Yau & He, 1989 and Yau, 1996, for Chinese Sign Language; Massone & Johnson, 1991 for Argentinian Sign Language; and Sutton-Spence & Woll, 1999 for British Sign Language. The phonology of name signs also seems to be different to some extent from the phonology of the rest of the sign language; for a comparative study on the phonology of four unrelated sign languages, including AdaSL, see Nyst & Baker (2003). Most sign languages of large Deaf communities use descriptive name signs, sometimes exclusively, sometimes in addition to name signs with other motivations. Descriptive name signs refer to a characteristic feature of a person, such as GLASSES for a person wearing glasses, or LONG-HAIR for a person with long hair. The large majority of the name signs in the (home) signing of 7 isolated and semi-isolated deaf persons seem to be descriptive (Yau, 1992). Like in any motivated sign, the iconicity of a descriptive name sign may become opaque with time. Initialized name signs consist of a fingerspelled handshape representing the first letter of the written, legal name. Such an initialised handshape may have a movement and location that is arbitrary or iconic. Other ways of referring to the legal name is by translating the meaning of the name or of a word resembling the name into sign language, thus constituting a calque or loan translation. An example is the name sign MARIJKE, which is a compound of the sign for MOTHER and RICH. In spoken Dutch, one may call his/her mother *ma*. The word for 'rich' is *rijk.* In NGT, the mouthing of the spoken name often accompanies the name sign (Nyst & Baker, 2003). Some sign languages have fixed name signs for certain frequently occurring legal names. Other strategies used in coining name signs are reference to the numbers assigned to pupils in schools, reference to birth order (as in the home signing of Mme. Pettikwi described in Yau (1992), or the extension of a name sign from one person to his/her relative(s). Several motivations can co-occur in one name sign, especially in phrasal names.

Members of Deaf communities may have pronounced preferences for one motivation over another. Descriptive names are often considered offensive. Supalla (1990) argues that contrary to descriptive name signs, initialized name signs ('arbitrary name signs' in his terms), are native ASL name signs. In sign languages personal names are in general not used as

vocatives. To draw the attention of a person, other strategies are used, depending on the context and culture.

3.6.2. Names in Akan

Before being named officially, an Akan child automatically receives a name based on the day of the week on which it is born. This name is called the *kradin*. Every day has its own name, of which a female and a male version exist. The male names start with a 'k' and the female names with an 'a', except for those born on a Thursday. Thus, 'Kofi' refers to a male and 'Afua' to a female born on *Fiada* or Friday. On the eighth day after birth, the father gives the child his/her full name. The full name includes the *kradin* and a family or clan name, the *agyadin.* Akan names can have a wide variety of motivations, including reference to the circumstances during birth, to physical characteristics, etcetera (Agyekum, 2006). Obeng (1997) describes the use of hypocoristic day names in Akan. The system of *kradin* plus *agyadin* or *din pa* has undergone changes due to the introduction of Christian and Islamic names and European (sur-) naming systems related to marriage and descent (Ansu-Kyeremeh, 2000, Obeng, 2001).

3.6.3. Names in AdaSL

In AdaSL no sign for 'name' is found. The GSL sign NAME is known by most AdaSL deaf signers though. All deaf and some hearing people have name signs. Three types of name signs are found in AdaSL, conventional names, nicknames and names based on the GSL system. The conventional AdaSL names are descriptive names, based on characteristics of the appearance or the behaviour of a person. For example, the original name sign of Afua Kaya refers to the scarification on her face. The sign for the late Kofi Adin refers to his joking. In some names, a Size and Shape specifying S hand is placed on a body part to refer to its characteristic size or shape, such as the knee or the belly-button. In one name sign, the S hand contacts the forehead, emphasising the round, pronounced forehead of the person. This sign name has a spoken counterpart in Akan 'Kofi Pɔ'. Kofi is the day name (discussed below) and Pɔ either comes from *pɔ* 'knot' or *pɔw* 'knob, round object' in Akan. Quite a number of names are compounds. A common compound part makes reference to the colour of the skin, which can be classified as BLACK or RED. The initial part of compound signs is often DEAF, as in DEAF RED-SKIN (Figure 3.26), the name sign of Ama Kɔkɔ, literally 'Sunday-born-female red (i.e. light-skin)'. Using the older AdaSL names sometimes gave rise to controversy. Perhaps this is due to the fact that

some of the names can be interpreted as derogative, or to the fact that preference is given to GSL names as presented below.

Most deaf people also have one or more nicknames. These may be intended to be offensive or humorous. Like the more conventional names, the nicknames are descriptive. A considerable number of them make reference to particular bodily or facial movements typical of a person, as in the name of KUMIWA when she was small, which represents the throwing in the air of the arms in an agitated way. The boundary between the older AdaSL names and nicknames is not always clear. No formal event was mentioned by any informant for the bestowal of conventional name signs or nicknames. In one case, a child was given the same name sign as her father. In formal contexts, deaf people prefer to use their GSL names. Some deaf people received their GSL style name sign at the school for the Deaf in Mampong, or at the school for the Deaf that existed for some months in Adamorobe (see §1.3.4). Others may have received a GSL name sign at the church for the Deaf in Adamorobe, or from the native GSL signer living in the village (see §1.3.5). GSL names are initialised. The handshape of the name sign is based on the first letter of the spoken name. This handshape makes double contact on the same or two different locations. Thus, the GSL name sign for Ama Kɔkɔ is the fingerspelled form of A, which is an S hand with the thumb extended, contacting the inner side of the lower arm twice. The GSL name is completely different from the older AdaSL name for Ama Kɔkɔ. The names represented through initialisation are the day-names (see above), which, with one exception, all start with a 'K' for males and an 'A' for females. As almost all names start with the same letter for people of the same gender, the handshape loses much of its distinctiveness and almost reduces to a gender marker. As a consequence, name signs are distinguished by differentiating the locations of individual name signs. For example, the S hand in the GSL name for Ama Kɔkɔ contacts the inner side of the lower arm, but in the name for another woman it contacts the outer side of the lower arm.

In speech, deaf people are referred to by their *kradin* or weekday name (see above) and a *din pa,* a proper name, or a nickname. [32] An example of a nickname was given earlier as 'Kofi Po', literally 'male-born-on-friday nut', or 'Ama Kɔkɔ', literally meaning 'Female-born-on-Saturday Red', whereby red refers to her light skin complexion. It is not clear whether the spoken nickname is based on the signed nickname or the other way around, i.e. whether one is a loan translation of the other. A few deaf people have the

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[32] The term nickname may have a negative connotation in English. Here, the term is used without this negative connotation.

nickname *mumu*, Akan for 'deaf, dumb' (Christaller, 1933). Although the deaf people in Adamorobe are aware of their spoken day name, none of the AdaSL names makes reference to the day of birth through a loan translation or mouthing.

Fig. 3.26 The AdaSL name sign of Ama Kɔkɔ

Next to personal name sign, a number of names for places and ethnic groups were found in AdaSL. These are not compared to similar names in other sign languages, but are described here for general interest. The village of Adamorobe and the nearby town of Aburi may be referred to by the same sign. This sign represents playing the great frontonfrom drum, typically done at the courts of Akan chiefs, as in Adamorobe and Aburi. Some use a separate sign for Adamorobe, which is also used to refer to visiting a shrine. This is also the sign for 'Saturday' (see Figure 3.25). The sign for the Gã village of Oyibi is a compound of GA (discussed below) plus a 1 hand pointing in the direction of the village. Similarly, Mampong-Akwapim, the place where the Deaf school is situated, is a compound of the sign SCHOOL and a 1 hand in the direction of that place. Madina, the closest suburb of Accra and a settlement of Muslim immigrants from the North, is referred to by a compound of NORTHERNER+MUSLIM+INDEX. Accra, the capital of Ghana, is signed by a compound of FOREIGNER+INDEX. The forest area north-west of Adamorobe is signed as COCOA+INDEX or COCOA+FAR, as cocoa plantations are found in this area.

AdaSL has some signs to refer to groups of people based on ethnicity. The sign for the closest neighbouring ethnic group, the Gã, looks like the sign BEAT, but its etymology is not clear. Another neighbouring group is the Krobo group. The sign KROBO refers to the loincloth worn by Krobo girls during their initiation. The sign for the ethnic group of the Ewe refers to a typical Ewe dance. The sign NORTHERNER for persons from all ethnic groups from northern Ghana, northern Nigeria and the Sahel countries

refers to the scarification on the cheeks of members of some of these groups, notably the Mossi from Burkina Faso. The sign for white people, glossed as FOREIGNER, refers to the light colour of their hair (see Figure 3.8).

3.6.4. Summary

Summarising, like in other sign languages, several types of name signs can be distinguished on the basis of their motivation. This motivation correlates with a difference in status and use of the type of name sign. Thus, conventional descriptive AdaSL names are found side-to-side with initialised names based on the spoken day name. This is not a language-internal change, but a contact induced change, as the initialised naming system is borrowed from GSL. Initialising the spoken day names reduces the distinctivity of the handshape, as most of the day names start with the same letter, depending on gender. Thus, in the semantic field of names, the influence of GSL is evident. The influence of spoken Akan, present in the semantic fields discussed earlier in this chapter is minimal in names. Mouthings of spoken names were not found. A few deaf persons have a (nick)name with the same meaning in AdaSL and in Akan. It is not clear whether one is a loan translation of the other, and if so, in which direction the transfer took place.

3.7.   Summary

AdaSL colour terminology shows that the notion of 'basic colour term' is problematic for this sign language and probably for others, too. Yet there is a clear correlation in AdaSL and other sign languages between the motivation of the sign for a colour and its place in the colour hierarchy as identified by Berlin & Kay (1969). If the definition of basic colour term is adjusted, the findings for AdaSL are in line with the colour hierarchy.

AdaSL has colour signs distinguished by mouthings (WHITE, BLACK, and RED) and also uses signs for concepts particularly associated with a specific colour. The ability of colour signs with mouthings to be intensified suggests that they are more basic than colour signs derived from coloured concepts, as these cannot be modified internally for 'intense'. The mouthings are based on Akan spoken words. The concepts used to refer to specific colours are often identical in AdaSL and Akan. The mouthings of the signs WHITE, BLACK, and RED may combine quite independently with other signs as well.

In AdaSL, nine kinship terms were identified, most of which refer to lineal kin, distinguishing three generational levels. A striking feature of AdaSL kin terms is that they primarily denote a non-kin concept. Thus, the sign used to mean 'mother' is primarily used as 'woman'. A relative age

distinction is made in siblings, but not in children. Making a distinction in a collateral category that is not made in the corresponding lineal category goes against Greenberg's claim that lineal kin is more unmarked than collateral kin.

The AdaSL numeral system is based on units of five and ten, except the sign EIGHT, which is based on FOUR. All numbers are constructed by addition or multiplication, thus reflecting the universal tendency to add and multiply rather than subtract and divide. AdaSL has cardinals, but no ordinals, thus substantiating Greenberg's finding that ordinals are more marked than cardinals in language worldwide. Contrary to what has been described for a number of large sign languages, AdaSL does not seem to productively incorporate number signs in other signs, nor does it use count buoys. In AdaSL, numbers above hundred are usually only used in the context of money. Counting of such high numbers makes use of signs for monetary units, such as coins and banknotes. Contrary to Akan, AdaSL has preserved the use of the colonial pound as a basic unit. Sufficient data are lacking to establish the similarities and differences between AdaSL and other sign languages with no stable group of deaf users. In conclusion of the three sections on semantic fields for which universals have been found cross-linguistically, we can state that AdaSL colour terms are in line with the colour hierarchy only when the definition of basic colour term is adjusted. The AdaSL kin terminology is in line with the tendencies identified cross-linguistically, with the exception of the relative age distinction made in collateral kin, but not in lineal kin. As for the number system, no deviations from the proposed universals are identified.

The expression of time in AdaSL shows similarities to other sign languages as well as to Akan. Contrary to sign languages of large Deaf communities, and similar to sign languages with no stable group of deaf users, AdaSL does not make use of a horizontal time line running from the back to the front. AdaSL does use the celestial time line, attested in sign languages with and without a stable group of deaf users, which describes an arc up in the air in front of the signer. Also, the growth line, attested in large sign languages as well as in Akan co-speech gesture, is used. Similarities of AdaSL time expressions with those found in Akan concern 1) parallels in semantic structure, 2) mouthings and 3) conventional gestures. Like Akan, AdaSL divides the year into shorter periods, based on meteorological, cultural, and agricultural events. Like Akan and like other sign languages (both those with and without a stabel group of deaf users), AdaSL divides the day in smaller parts referring to the position of the sun. Contrary to Akan, AdaSL names for the days of the week refer to events typically associated with those days.

Three types of personal name signs are used in AdaSL: conventional names, nicknames and initialised names. Conventional names and nicknames are descriptive and sometimes compounded. In some cases, there are parallels in the semantic structure of the name sign and the spoken name of a person. Nowadays, initialized name signs, borrowed from GSL, are used in more formal contexts. Included in this section is a description of name signs for places and ethnic groups. Whereas the influence on names of GSL is evident, the influence of Akan is quite minimal.

3.8.   Discussion and conclusion

A general characteristic of the lexicon of AdaSL seems to be a relatively high degree of macrofunctionality, i.e. signs seem to have a wide range of meanings. Thus, a sign glossed as ELDER is used to mean 'elder' or 'first-born' when contrasting siblings. In other contexts, however, it may also mean 'adult', 'chief', and 'Monday'. The same sign, with a slightly different orientation is used for 'strong' and is a common greeting. A high degree of macrofunctionality of lexical items has also been noted for Providence Island Sign Language by Washabaugh (1986).

Comparing AdaSL with other types of sign languages, we find that 1) AdaSL behaves more like sign languages of large Deaf communities with regard to the expression of colours, 2) AdaSL resembles Nicaraguan Sign Language as used by its first and second cohort in its numeral system (Katseff, 2004), 3) AdaSL resembles sign languages with no stable group of deaf users in its expression of time, and 4) AdaSL resembles sign languages of with and without a stable group of deaf users in using descriptive name signs.

All semantic fields discussed, except personal names, show the integration of Akan mouthings in the language. Loan translations or parallel semantic structures are found in the kinship system, in time related terms, and in colour terms. English mouthings are attested, as well as some influence of GSL. All in all, the influence from Akan on the AdaSL lexicon appears to be considerable.

4. THE EXPRESSION OF SIZE AND SHAPE

4.1. Introduction

This chapter treats the expression of size and shape in AdaSL. AdaSL is compared to sign languages described in the literature as well as to Akan, the major spoken contact language of AdaSL. No significant differences between individual sign languages or types of sign languages have been reported in the expression of size and shape. The descriptions of size and shape expression in different sign languages suggest that there is considerable cross-linguistic similarity in this field. Unlike spoken languages, sign languages can and typically do express size and shape directly through iconic representation, an opportunity offered by the manual-visual modality. In this chapter I will describe several ways of expressing size and shape in AdaSL and consider how AdaSL compares to other sign languages, as well as to Akan in this respect.

In §4.2, the expression of size and shape in other sign languages is discussed on the basis of descriptions in the literature; in this section, I also consider adjectives expressing size in Akan. In §4.3, the expression of size and shape in AdaSL is discussed. Section 4.3.1 follows up on the findings in §2.6, where the iconic motivation of handshapes, including Size and Shape Specifier (SASS) handshapes, was described. In this section, I discuss the use of depiction types in AdaSL and investigate in some detail the features of tracing signs. In §4.3.2, lexical signs of relative size are considered. Two types of signs expressing absolute size and shape are found in AdaSL. These are signs using the growth-line, as described in §4.3.3 and measuring stick signs, as described in §4.3.4. Lastly, in §4.3.5, various options of internal modifications that contribute to the size and shape meaning of a sign are described. The chapter ends with a summary and discussion in §4.4.

4.2. Size and shape in sign languages and Akan

Due to the difference in modality, sign languages differ considerably from spoken languages in the expression of size and shape. In sign languages, signs and parts of signs may iconically represent a size and/or a shape of an entity in the real world (e.g. Supalla, 1986 for ASL; Senghas et al, 1999, for Nicaraguan Sign Language and Zwitserlood, 2003, for NGT). Such elements are called Size and Shape Specifiers. In the sign language literature, the term Size and Shape Specifier (abbreviated as SASS) is used to refer both to sub-lexical size and shape elements as well as to full signs. Thus, Size and Shape Specifiers are found as sub-lexical elements of signs expressing a non-size or

non-shape concept. The presence of (sub-lexical) SASS handshapes in signs with no size or shape meaning in AdaSL was attested in §2.6, e.g. the S+lower arm handshape in the sign BOTTLE (Figure 2.4, repeated here as Figure 4.1). In this sign the handshape or articulator represents the size and shape of a bottle, but the sign as a whole expresses a non-size and -shape concept, i.e. the concept of 'bottle'.
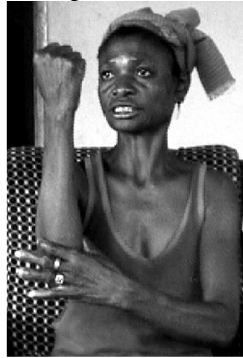
Fig. 4.1 BOTTLE

Taub (2001) distinguishes expressions of size and shape through SASS handshapes alone from those expressions in which size and shape is expressed by a combination of an SASS handshape with a SASS movements. The use of a SASS handshape in a sign is also called a static Size and Shape Specifier (Supalla, 1986). The use of a SASS handshape in combination with a SASS movement is also called a dynamic or tracing SASS (Supalla, 1986). The Size and Shape Specifiers mentioned so far are found in signs expressing concepts related to the semantic field of size and shape, such as SQUARE or TRIANGLE, but they may also occur in signs for concepts not related to the semantic field of size and shape, such as the AdaSL sign BOTTLE (Figure 4.1). In the analysis of AdaSL, I distinguish between Size and Shape Specifying handshapes and movements on the one hand, and Size and Shape signs on the other. Regardless of whether they are static or dynamic, SASS elements may use different types of depiction. Thus, a SASS handshape may represent a size and shape through entity depiction, i.e. by standing for an entity with the relevant size and shape. Alternatively, a SASS handshape or movement may represent the outline of a particular size and shape through outline depiction. The concepts of entity and outline depiction have been presented in §2.6.

For most sign linguists, the term Size and Shape Specifier is mainly associated with tracing Size and Shape Specifiers signs. Such tracing signs describe a path through space, leaving a virtual trace in a meaningful shape, as in the above example of SQUARE. They can be meaningfully located and

oriented in space in various sign languages (Zwitserlood, 2003: 153).
McDonald (1982:47) notes about tracing SASS in ASL that
"important formational characteristics seem to be the number of fingers
extended, whether they are bent or not, spread or not, and the thumb position
relative to the palm and fingers."
Klima & Bellugi (1979) describe ASL compounds that are a combination of
a basic sign with a tracing SASS sign, as in (4.1) below.

(4.1)   RED^RECTANGULAR   'brick'
         SIGNATURE^RECTANGULAR   'credit card'
         PICTURE^RECTANGULAR   'photograph'

To the best of my knowledge, Size and shape signs consisting exclusively of
a SASS movement, i.e. that have an arbitrary or non-SASS handshape, have
not been reported for ASL or for any other sign languages.

     In addition to Size and Shape Specifying handshapes and
movements, non-manual elements such as mouth gestures and body
positions may contribute to the expression of size in a sign. For example, in
BSL cheeks sucked in convey 'smallness', whereas puffed cheeks conveys
'largeness' (Sutton-Spence & Woll, 1999:87). Rather than being a sub-
lexical element, such non-manual elements seem to have an adjectival
function in some sign languages. They may be simultaneously combined
with lexical signs, modifying them for size. For example, a sign for BALL
may be combined with a mouth gesture for 'smallness', expressing the
notion of a small ball.

     In addition to, or perhaps partly overlapping with, tracing SASS
signs we find what one may call 'measure signs'. These signs are typically
not mentioned as a separate group. However, distinguishing them from
SASS signs is relevant for the description of AdaSL. Measure signs are
primarily used to express the size (but not the shape) of an entity, for
example, a fish, a bottle, a baby, a piece of sausage, the thickness of a wall.
The size or measure of an entity may be expressed in relative or absolute
terms. In Sign Language of the Netherlands, as well as in the gestures of
Dutch speakers, manual signs that involve outline depiction may represent
the absolute measure by the distance between the hands or between the
fingers of one hand in space. The selection of the number of hands, as well
as their handshape and orientation, depends on features of the concept
modified. Thus, in NGT the sign expressing the size of a bottle differs in
orientation from the sign expressing the size of a sausage. Features
determining the selection of one measure sign over another are size, shape
and position (e.g. horizontal, vertical) of the entity. This type of absolute
measure signs seems also to be used in other Western sign languages. A sub-

type of absolute measure signs are signs using the 'growth-line', which is an abstract vertical line on the side of the dominant hand next to the signer, running from the ground upwards into the signing space. Signers and gesturers of diverse linguistic affiliation use this 'growth-line' to indicate the height of entities, mainly those that typically stand on the ground, such as humans (but not babies), some animals and plants (Schermer & Koolhof, 1990 for NGT; Sutton-Spence & Woll, 1999:199 for BSL; Claessen, 1984 for Swahili gestures).

In addition the relative size of the entity may be expressed by the mouth gestures just mentioned, expressing for example 'smallness' or 'largeness'. These mouth gestures cannot occur without a manual part and may combine in a simultaneous way with (manual) signs expressing an absolute size or measure.

Spoken Dutch, as many spoken languages, has non-selective words for relative measures. Thus, the words *groot* ('big') and *klein* ('small') may apply to a large variety of objects. The use of such relative measure terms is motivated by the size of an entity as compared to the prototypical size of that entity. As a consequence, entities varying widely in absolute size and shape may be qualified by the same relative measure term. In contrast, Sign Language of the Netherlands does not have a set of fixed lexical signs to express relative size. Rather, there are various signs the use of which crucially depends on the object that is being described. To what extent this is also the case for other sign languages is not yet clear.

Spoken Akan has measure words for relative size, including the adjectives *kɛseɛ* for 'big', *ketekete* for 'small', *tenten* for 'tall' and *tia* for 'short'. These adjectives may be modified for emphasis by reduplication. In addition to adjectives, the language has verbs expressing relative size, e.g. *so* for 'to be big' and *ware* for 'to be tall or long' (Christaller, 1933). Like speakers of Dutch, speakers of Akan use gestures to express an absolute size. Whereas Dutch gestures usually demarcate a particular stretch of space using outline depiction, Akan speakers generally use gestures of absolute size to demarcate a particular stretch of the hand or arm, as if the arm were a measuring stick. The selection of a particular part of the hand (such as the thumb tip, or the tip of the little finger) or the selection of a particular handshape (such as a fist or the extension of the index finger) on the 'measuring stick arm' expresses a particular shape. We will see that the measuring stick signs expressing size and shape in AdaSL (see 4.3.5) closely resemble the Akan system. Speakers of Akan also make use of the growth-line (see §4.3.3).

4.3.   Size and shape in AdaSL

In order to study the expression of size and shape in AdaSL, two types of data were considered. Firstly, the data of six signers are used that had been gathered in the attempt to collect single signs. As pointed out earlier, these data often also contain phrases and short texts. Secondly, a subset of all the AdaSL data collected, was analysed, consisting of more than 14 hours of spontaneous AdaSL from six signers (see §1.8.1). These data were scanned for expressions of size and/or shape. In addition, forms observed incidentally and insights gained in daily interaction with AdaSL signers during the periods of fieldwork were taken into account.

The following systems for the expression of size and/or shape were found in the data. Firstly, the frequency and use of tracing signs is described in §4.3.1, where their distribution is argued to be related to the use of depiction types. Secondly, AdaSL uses lexical signs of relative size, as described in (§4.3.2). In addition, two types of measure signs of absolute size are described: signs using the growth-line (§4.3.3) and "measuring stick" signs (§4.3.4), which are very similar to the gesture system for expressing absolute size as used by speakers of Akan. Finally, signs modified internally in several ways are found in the data (§4.3.6).

4.3.1.   Tracing Size and Shape Specifiers and depiction types

The use of Size and Shape handshapes has already been described when listing the iconic functions of handshapes in the AdaSL lexicon in §2.6. The present section follows up on two of the findings from §2.6. Firstly, entity depiction was found to be the most frequent type of depiction while tracing depiction was found to be the least frequent. Probably related to the frequency of depiction types is the second finding that, unlike NGT and probably a considerable number of other sign languages, round handshapes with thumb opposition do not trace round outlines in AdaSL. Whereas no quantitative information is available on the frequency of depiction types in NGT, the difference between NGT and AdaSL in the use of round handshapes with thumb opposition suggests that the high frequency of entity depiction and the very low frequency of tracing signs in the lexicon may be a language-specific feature of AdaSL. Indeed, the discussion in the present section will reveal a systematic difference between NGT and AdaSL signs in the selection of the depiction type. This observation will be supplemented by a descriptive listing of the types of tracing signs found in the AdaSL lexicon and spontaneous texts, revealing a significant difference between signs tracing an outline and signs tracing an entity.

Looking at signs that represent the same visual image in NGT and AdaSL, a regular pattern is identified: in NGT the entity is represented

through outline depiction, in AdaSL it is represented through entity depiction. This pattern is found in visual images containing a curved form, such as cylinders or balls, and in those containing a long, thin, flat form, such as bands, labels and broad stripes. Examples of visual images consisting of a curved entity, but using different depiction types in NGT and AdaSL, are BOTTLE (representing a vertical cylinder), CUP (representing a short, round container), COW (representing the horns) and ELEPHANT (representing the trunk).[33] While all the NGT signs use a tracing C hand, the AdaSL signs have a vertical lower arm (see Figure 4.1), a B", an S (see Figure 4.2) or an X hand (see Figure 4.3) respectively. That is, all of these signs involve entity depiction.

Fig. 4.2 COW   **Fig. 4.3 ELEPHANT**

In the NGT database, the bC hand is frequently found to trace the outline of long, thin entities, as in PERSON, BAND, RIVER, and TIE. In the AdaSL database, the bC hand is not attested. To represent narrow cylinders or lines, NGT may use an F hand, as in CAT. In AdaSL, F hands or bO hands are never used as such. Rather, to represent narrow cylinders and lines, AdaSL uses one or two 1-hands, as in STICK and CORD (Figure 4.4).

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[33] The source of the NGT signs in this section is http://www.gebarencentrum.nl/miniwoordenboek, which was visited in June 2006.

Fig.4.4 STICK

The same holds for smaller ball-shaped objects, which may either be represented by a C hand with spread fingers or by an O hand in NGT, e.g. in the sign BOLLETJE ('bread bun') and the sign for EI ('egg'), respectively. In AdaSL, this handshape is not used as such. Rather, an S hand is used, as in TOMATO, EGG, and STONE. Moon-shaped entities show the same pattern, as the sign for 'moon' is made by a closing bO hand in NGT, but by an X hand in AdaSL. In NGT long, flat, thin entities may be represented by one or two bC hands, tracing the outline of the flat entity. Again, such forms are represented in AdaSL by entity depiction or by other strategies. For example, a label on a tin (not in the database) is represented by a B hand attached to the upright lower (non-dominant) arm, which represents the tin, as shown in Figure 4.5. To represent a bandage around the leg, a B hand traces a path on the leg. Where entity depiction of a visual image is not feasible, AdaSL turns to alternative visual images, rather than to outline depiction through tracing. Though it was quite easy to find pairs of signs whereby the NGT sign involves outline depiction and the AdaSL sign entity depiction, AdaSL-NGT sign pairs with the reverse distribution of depiction types were not found. Thus, there appears to be a consistent pattern in the use of depiction types: where NGT uses outline depiction, AdaSL uses entity depiction.

Fig.4.5 'Label on a tin'.

From the above description, it seems likely that tracing signs are less frequent in AdaSL as compared to NGT but it is not clear why. To establish whether the tracing signs are also different in nature in AdaSL as compared to NGT, the signs coded as 'tracing' in the database of single signs were further divided in subcategories. In the 23 signs coded as having tracing handshapes, four main subcategories can be distinguished.

1. *Tracing the outline of a bound volume in neutral space (n=4).* In two signs, KIOSK#SQUARE (Figure 4.6) and PAN, the movement and the handshape of the sign jointly represent the outline of the shape. They are very much like the dynamic size and shape specifiers described for ASL by Supalla (1986). In STOVE-2#ROUND (Figure 4.7) and KENKEY, the hands alone represent the outline of the entity; hence, they are like the static size and shape specifiers described for ASL by Supalla (1986).

2. *Tracing the outline of a bound volume in relation to the body (n=4).* Four signs are found in which the hand(s) represent(s) only one side of the outline of a shape while the other side is either represented by the body, e.g. in PREGNANT, and SATISFIED (Figure 4.8), or by the non-dominant hand, as in the unbalanced sign LOT OF MONEY#PILE and, arguably, BISCUIT.

3. *Representing an entity and tracing its extent (n=9).* Six signs are found in which the B handshape represents a surface. The movement traces the extent of the surface. These include SURFACE:BODY:RED (Figure 3.6), FIRE-2, FOREIGNER/ACCRA (Figure 3.8), and TABLE. In three signs, STICK (Figure 4.4), CORD and ELEPHANT (Figure 4.3), the 1 hand represents a cylinder, whereby the movement traces the extent of the entity.

4. *Tracing a one-dimensional line on the body (n=6).* In two signs, a static hand is placed meaningfully on a location of the body, showing a boundary on the body, e.g. in SHORTS#UP-TO-KNEE. In

four signs, one or more paths are traced on the body with the
fingertips of a moving hand, as in POLICE#STRIPES-ON-TROUSERS,
FRIDAY and NORTHERNER (Figure 4.9).
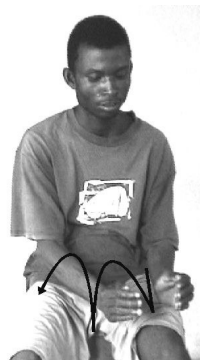
Fig.4.6 KIOSK   **Fig.4.7 STOVE-2#ROUND**

Fig.4.8 SATISFIED   **Fig.4.9 NORTHERNER**

Signs involving outline depicting SASS movements seem to be frequently
used in other sign languages, although the accounts of this are
impressionistic and not strictly quantified. According to Taub (2001:77)
tracing SASS signs (or "path-for-shape iconicity" in her terminology) are
'ASL's second main iconic strategy', in addition to entity handshapes (or
"shape-for-shape iconicity"). With only one exception, the compounds of
basic signs with 'Size and Shape Specifiers' in ASL described by Newport
& Bellugi (1979), as exemplified in (4.1), all involve SASS signs tracing a
relevant outline. With respect to NGT classifiers, Zwitserlood (2003:161)
notes that "in NGT, many nouns exist that are similar to tracing signs".

These observations on ASL and NGT strongly contrast with the AdaSL data. Out of the 365 signs in the AdaSL single signs database, only eight trace the outline of a bound volume.

        To investigate whether such tracing signs are more frequent in productive constructions, the 14 hours of spontaneous text were scanned for signs tracing the outline of a volume in space. In this corpus, too, tracing signs representing the outline of bound volumes appear to be very rare; only 14 cases were identified. A description of their form reveals an interesting property of these tracing signs. In the spontaneous texts, four of the signs tracing an outline in space have no movement or a non-SASS movement as opposed to ten that do have a SASS movement. All four outline tracing signs with no SASS movement are very similar in form, consisting of two B^ hands with the palms facing each other, either next to each other or on top of each other. They were found in reference to the following entities; a turtle (Figure 4.10), a duck, a stone, and a video camera. In all cases the signs refer to compact objects that are larger than an S hand, which is normally used to depict compact objects. It is not clear to what extent the positioning of the hands, i.e. on top of or next to each other, is distinctive or in free variation. The distance between the two hands may contribute to the representation of size in these signs.

Fig. 4.10 Static outline trace: the size of a turtle

The ten signs containing a SASS movement tracing the outline of bound volumes in space are presented in Table 4.1 below, accompanied by the entities they refer to.

Handshape	Movement	Orientation of shape	Referent (signs)
B	Square	Horizontal	crate/ box field/small area
B	Square	Vertical	Kiosk chief's palace
1	Square	Vertical	Kiosk
B^	Round	Vertical	Car aeroplane turtle/tortoise
B^	Round	Horizontal	Bowl fire stones

Table 4.1. Tracing Size and Shape Specifiers in AdaSL

All but one of the signs with tracing SASS in Table 4.1 consist of two balanced B hands, either straight or bent, as in STOVE (Figure 4.7). The one exceptional case where a 1-hand is used, KIOSK (Figure 4.6), appears to have a variant with a B hand. Based on the signs with tracing SASS movements found, it seems that finger selection is not used in a distinctive way in such signs in AdaSL. Also, none of the tracing signs have thumb opposition in their handshape, suggesting that this feature may not be used distinctively in tracing signs either. Contrary to what McDonald (1982:47, see §4.2.) states for ASL, the contribution of handshape to the meaning of signs with tracing SASS movements in AdaSL is restricted to its specification for joint flexion. However, the joint flexion correlates with the type of movement of the sign and may in fact be predictable on the basis of the movement. This implies that the handshape does not contribute to the expression of Size and Shape at all in outline depiction in AdaSL. If that is the case, then AdaSL has tracing signs consisting of a SASS movement, but no SASS handshape, which is a type of tracing sign that is quite unusual cross-linguistically.

In short, on the basis of the finding in §2.6. that entity depiction is the most frequent and tracing depiction the least frequent type of depiction in AdaSL, the hypothesis that AdaSL would be different from NGT in that sense was substantiated. Firstly, a regular pattern of depiction type was identified: visual images are represented by tracing an outline in NGT and by entity depiction in AdaSL.

Looking at the kinds of tracing signs that occur in the lexicon, a similarly low frequency of outline traces was found as only eight out of 23 tracing signs in the database of 365 single signs use outline depiction. In 14 hours of spontaneous discourse only 14 outline tracing signs could be found.

In these signs, the size and shape is only expressed by a SASS movement. Unlike ASL (cf. McDonald, 1982:47), the contribution of the handshape in outline tracing signs in AdaSL is minimal and usually absent.

4.3.2. Lexical signs of relative size

A small group of lexical signs indicating relative size is found in AdaSL: BIG (Figure 4.11), SMALL (Figure 4.12), TALL (Figure 4.13), and SHORT (Figure 4.14). All of these signs come with fixed mouthings, as indicated in Table 4.2.

Sign	Mouthing	Source word
BIG	[abo], in fast repetition: [puffed cheeks + release]	*agbo* ('big' in Gã)
SMALL	[spread lips, teeth closed + ttt]	*ketekete* ('small', little' in Akan)
TALL	[spread lips, teeth closed]	*tenten* ('tall' in Akan)
SHORT	[spread lips, teeth closed]	*tia* ('short' in Akan)

Table 4.2. The mouthings associated with AdaSL signs of relative size and their spoken language sources

Fig. 4.11 BIG   **Fig. 4.12 SMALL**

Fig. 4.13 TALL   **Fig. 4.14** SHORT

The mouthing for BIG, [abo], comes from *agbo*, the word for 'big' in the neighbouring spoken language Gã. Speakers of Akan in Adamorobe also occasionally use this word. Semantically, these signs give a subjective judgment of the relative size of an entity. They are fixed and do not change according to the entity they modify. Thus, the sign BIG may modify the sign COW or the sign RAT, as long as both are considered relatively big. Signs of relative size follow the noun they modify, as in BANANA BIG. The sign SMALL is the only of the four that is also used as a gesture by hearing Akan. The signs SHORT and TALL are both located on the growth-line, as discussed in the next section. The mouthing associated with these relative size signs may also combine with measuring stick signs, as will be discussed in §4.3.5.

4.3.3. Measure signs of absolute size: The use of the growth-line

The growth-line which is attested in many sign languages runs vertically next to the body of the signer. Placing signs on this line refers to the height of the entity the sign refers to in vertical position (see e.g. Schermer, Fortgens, Harder & Nobel,1991:137 for NGT and Sutton-Spence & Woll, 1999:185 for BSL). In many sign languages, the sign CHILD consists of a B hand placed on a relatively low position on this line and basically indicates a small entity standing on the ground.

As already noted in §3.3, AdaSL also uses the growth-line. Lexical signs using this line are SHORT (Figure 4.14), TALL (Figure 4.13) and CHILD (Figure 4.15).
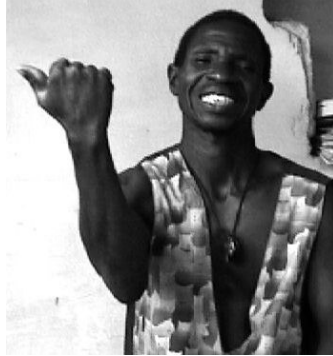
Fig. 4.15 CHILD   **Fig. 4.16** BABY

Productively, the growth-line is mostly used to indicate the (relative) height of a person. To do so, an upright lower arm with an S handshape is placed on the relevant height on the growth-line. The S hand in the AdaSL sign probably represents the head and the lower arm represents (part of) the body. The same articulator (S hand + lower arm) is also used in the lexical signs BABY (Figure 4.16), BIRTH, SHORT (Figure 4.14) and possibly MARRY (Figure 3.12). Placing this articulator low on the growth-line renders the meaning 'a relatively short person', which by default means 'child'. As in other sign languages, the sign CHILD can be inflected for plural by adding a repeated horizontal movement to the side. Placing the same articulator at the signer's head level indicates 'relatively tall person', by default 'adult'. These two signs may also be combined with the sign BIRTH to contrast a younger and an elder child of the same parent. In the spontaneous AdaSL data, the S hand was sometimes replaced by a B-hand, either palm up or palm down, whereby the lower arm changes to a more horizontal position. One signer signed CHILD with a B bent, palm up. The variation in palm orientation appears to be influenced by whether or not the referent is human. In those cases where a B-hand palm down was used, the referents were animals (a cock and a sheep, see Figure 4.17).

Fig. 4.17 SHORT-animal

According to Kirby (1998), the handshape used by hearing Ghanaians to indicate the height of both humans and animals is also a B hand. Moroever, the difference in palm orientation in indicating the height of persons and animals is also described for the gestures of hearing people in the south of Ghana (Kirby 1998:12): "palm of right hand held down – showing the height of an animal or thing, palm of right hand held up – showing the height of a person".[34] This pattern is probably related to a cultural constraint since holding the palm down when indicating the height of a person/child is said to block the person's growth. Avoiding a palm down B hand in indicating the height of a person may also be related to a taboo on touching the (top of the) head that is also found in other parts of West-Africa, e.g. in Mali. Interestingly, in many places in Africa, the gesture to indicate the height of a person has a handshape and/or orientation that is different from the B hand palm down. In addition to a B hand with the palm down, the Luo (Western Nilotic, Nilo-Saharan), the Samburu (Eastern Nilotic, Nilo-Saharan), the Kipsigis (Southern Nilotic, Nilo-Saharan), and the Gusii (Bantoid, Niger-Congo) all use a hand held up in front of body, whereby the palm is facing backward to the contralateral side with the elbow in a right angle to indicate the height of children (and long objects) (Creider, 1977). Some African sign languages also use a handshape and/or orientation other than a flat B hand, palm down, in similar height-of-person signs, e.g. Ugandan SL and Malawi Sign Language.

4.3.4. Measure signs of absolute size: Measuring stick signs

A second type of signs expressing absolute size and shape are measuring stick signs. They are a very common way of expressing size and shape in

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[34] Kirby (1998) gives a description of 69 Ghanaian gestures with a standard meaning (mostly emblems).

AdaSL. As measuring stick signs are cross-linguistically unusual in several respects, they are described quite extensively. Their form is described in §4.3.4.1, their usage in §4.3.4.2, their iconicity in §4.3.4.3. Their alternative patterning with respect to the Dominance Condition (Battison, 1978) is discussed in §4.3.4.4.

Form
In these signs, one arm functions as a measuring stick for the other. The handshape of such a measuring stick is usually a SASS handshape, e.g. an S hand (MS:fist) or a 1 hand (MS:index). The demarcating hand indicates the relevant extent on the measuring stick arm by contacting, making a chopping movement on or holding it at a particular point. When merely contacting or making a chopping movement on the measuring stick arm, the demarcating hand usually is a 1 hand or a B hand. When holding the measuring stick arm or hand, the demarcating hand has a grasping handshape, e.g. a Lax O hand. The measuring stick function in combination with the SASS handshape enables measuring stick signs to simultaneously express the size and shape of entities of that match the size and shape of (parts of) the arm, hand, or digits. For example, demarcating the measuring stick at the shoulder, as in MS:arm (Figure 4.18), expresses a size and shape that is roughly similar to the size and shape of an arm. Demarcating the hand at the wrist, as in MS:hand (Figure 4.19), expresses a size and shape similar to the length and breadth of a hand.
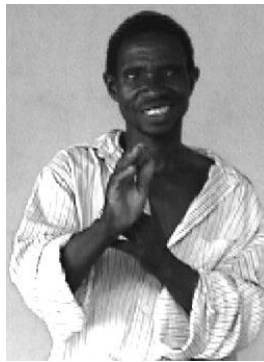
Fig. 4.18 MS:arm   **Fig. 4.19 MS:hand**

It is also possible for the index and thumb of the demarcating hand to hold the base of the extended index of the measuring stick hand, thus indicating that the referent has the size and shape of an extended index (MS:index), for example to indicate a pepper type, or a local banana. Instead of holding the index, the demarcating hand may hold the thumb of the measuring stick hand

at the distal knuckle, indicating a rather compact shape of about the size of the thumb tip (MS:thumbtip; see Figure 4.21), e.g. a sugar cube, a big bead, or a compact, paprika-shaped type of pepper. To indicate a curved shape, the lower arm, curved at the wrist and in the hand, may be demarcated, as in Figure 4.20.

Fig. 4.20 MS:curved arm

Some measuring stick signs have a one-handed variant. The two-handed variant of the MS:thumbtip sign is illustrated in Figure 4.21. In the one-handed variant, the index finger of the dominant hand demarcates a relevant extent on the thumb as in MS:thumbtip-1 (Figure 4.22). In the one-handed variant of MS:index, the thumb can demarcate a relevant length on the index finger

Fig. 4.21 MS:thumbtip   Fig. 4.22 MS:thumbtip-1

In two signs, MS:index, polished surface and MS:lower-arm, polished surface, the demarcating hand does not demarcate as such, but rather slides

along the demarcated part, the index and the lower arm respectively, to indicate the smooth quality of a surface.

Measuring sign	Examples of referents
MS:thumbtip **(Figure 4.21 & Figure 4.22)**	a type of pepper beads sugar cubes a boil melon pips
MS:index	okra a large bee long teeth
MS:index+hand	okra a banana
MS:little-finger	a small bee
MS:closed-B	a part of an orange a bird's egg small breasts a boil
MS:hand (Figure 4.19)	a bottle of malt beer a type of banana a tin
MS:fist	big eyes a stone a clod of bee wax
MS:lower arm	a fish species a branch of a tree
MS:arm (Figure 4.18)	a type of yam (a crop) a stick
MS:curved arm (Figure 4.20)	a type of water yam (a crop) smoked fish a banana tree
MS:index, polished surface	A type of peanut a knife
MS:lower arm, polished surface	a milk tin a tin of fish

Table 4.3 Overview of the measuring stick signs in AdaSL

4.3.4.1. Usage

As measuring stick signs express an absolute size and shape, entities of which the size and shape is represented by a measuring stick sign do not surpass the size of (parts of) the arm. Most frequently, measuring stick signs are found to modify signs for crops (yams, bananas, etc.), but they are also found in connection with other foodstuffs (a tin of milk, a bottle of beer, etc.), instruments and other small objects, as can be seen in the second column of Table 4.3.

Signers differ considerably in the frequency with which they use measuring stick signs. In general, the use of these signs seems to be triggered in situations where the signer is explaining concepts. The corpus of single signs contains many measuring stick signs as informants tended to give signed paraphrases for single concepts instead of single signs. Generic signs were specified by adding a measuring stick sign, for example to distinguish different types of bananas: small bananas, long bananas, fat bananas, etcetera. Similarly, BEE MS:index is contrasted with BEE MS:little-finger.

(4.2)   FIRE HOT MS:thumbtip BIG HOT STRIKE-THROAT HOT
         'It is very hot and as big as a thumbtip (i.e. a type of pepper).'

(4.3)   SMELL MS:thumbtip SMELL-GOOD MS:thumbtip FIRE SMALL
         'There are peppers with a good scent, there are small peppers...'

(4.4)   WATERYAM MS:arm HARD
         'Wateryam is as long as an arm and very hard'

(4.5)   SEE STIR RED MS:thumbtip stir red
         'You know, the thing of the size of a thumbtip, which is red and
         which you stir in (i.e. a bouillon cube)'

The combination of generic signs with specifying measuring stick signs resembles compounds of basic signs with tracing signs of the type RED+RECTANGULAR meaning 'brick' as described for ASL by Klima & Bellugi (1979), see example (4.1). Like the tracing signs in ASL, the measuring stick signs in AdaSL are productive, independent signs with an exclusive size and shape meaning.

4.3.4.2. Iconicity

The smaller measuring stick handshapes, such as the MS:fist or the MS:index, are found as sublexical SASS handshapes in non-size and shape signs (see

Chapter 2). An exception is measure stick handshape in MS:little-finger, which is not found as a sublexical SASS handshape. Apart from in the MS:little-finger sign, this handshape is only found the sign SIX (see §3.4.4), where it has no specific SASS motivation. Others, such as MS:arm, are only found in the system described here. The MS:lower arm sign turns out to be the largest SASS handshape, or better, articulator shape that can be part of lexical signs, for example in BOTTLE (Figure 4.1). In lexical signs other than the measuring stick signs, these SASS handshapes are sublexical elements of signs that as a whole do not have a size and shape meaning in most cases. The meaning of such signs follows from the specifications for the handshape, in addition to the specifications for the movement and the location. Obviously, this is the case in most sign languages. Typically, it is not possible to isolate the SASS meaning of a SASS handshape, e.g. by simply presenting the SASS handshape on a neutral location with a neutral orientation. Indeed, this is not possible in AdaSL either. Yet, measuring stick signs do come close to this option. They seem to be a way of singling out the iconic function of SASS handshapes, which are otherwise sublexical elements of larger lexical signs. Indeed, the movement, location and orientation of these signs are not iconically or otherwise motivated in most cases. They are meaningless and mainly determined by ease of articulation. Although the SASS handshape cannot occur entirely on its own, the only function of the demarcating hand is to present the SASS handshape and mark its relevant extent, in most cases. As a result, the size and shape meaning of the SASS handshape can occur in isolation, without additional information contributed by the location and the orientation of the sign. The demarcating hand is found as a sublexical element as well in signs for clothes, such as boots, a skirt, knickers, etcetera. In these signs, the demarcating hand is dominant and indicates the prototypical extent of the type of clothing. In these signs too, the function of the demarcating hand is mainly indication or presentation of the relevant extent.

As for the type of depiction, measuring stick signs are ambiguous. These measuring stick or SASS handshapes directly represent an entity or size and shape rather than its outline. As such, this hand represents size and shape through entity depiction. In contrast, the other demarcated hand marks the extent of the size by outline depiction. Thus, measuring stick signs combine the use of entity and outline depiction.

4.3.4.3. Measuring stick signs: an African system

Demarcating parts of the hand or arm to indicate size and shape of a referent is a common strategy in the gesturing of hearing Ghanaians as well. In fact, this strategy is used in several parts of West, Central, and East Africa.

Hearing Malians use the same system in gesture. Claessen (1984) explicitly mentions the use of a number of measuring stick gestures in his article on the gestures of the Swahili (East Africa). Comparing the gestures of four East African ethnic groups, Creider (1977) finds the measuring stick gestures only with the Luo (Nilotic), for comments on fish. The others, Samburu (Nilotic), Kipsigis (Nilotic), and Gusii (Bantu), do not use this system. Hochegger (1978) describes similar gestures in Central Africa where one hand or both hands can hold (part of) the other hand, e.g. thumb or little finger, or a body part (upper leg, waist) to indicate thickness. As far as other African sign languages are concerned, measuring stick signs are also used in Ugandan Sign Language. At present, it is not clear to what extent this strategy is used in sign languages outside of Africa. Measuring stick signs are not used in NGT.

4.3.4.4. Measuring stick signs and the Dominance Condition

After having established the measuring stick sign system of AdaSL, let us now turn to phonological properties of these signs. The measuring stick strategy results in a set of phonologically distinct signs. As we have seen, in most measuring stick signs both hands are involved, most of which have dissimilar handshapes. Thus, these signs can be classified as unbalanced signs, according to the terminology used in Van der Hulst (1993, 1996). In his Dominance Condition, Battison (1978) states that in unbalanced signs with different handshapes, the dominant hand is moving while the non-dominant hand is kept still. The latter serves as a location for the moving hand and is capable of taking handshapes from a limited set of unmarked handshapes only. The Dominance Condition is widely considered a universal constraint on sign formation in sign languages.[35] In general, unbalanced signs in AdaSL adhere to the Dominance Condition, except that the handshapes occurring on the non-dominant hand are not always unmarked (see §2.4.3). The measuring stick signs, however, do not adhere to the Dominance Condition, as the assignment of a dominant status to one of the two hands is not straightforward.

   In most measuring stick signs, the demarcating hand is moving on the measuring stick hand/arm, either by holding it, by making a chopping movement on it, or by moving along it. That is, the demarcated measuring stick hand serves as a location. Typically, in unbalanced signs, the active hand, here the demarcating hand, is considered the dominant hand and the location hand, here the measuring stick hand, the non-dominant hand.

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[35] E.g. Frishberg (1983:81) states: "The [Dominance and Symmetry] constraints outlined here are probably universal, resulting as much from neural organization as from linguistic patterning".

However, this assignment of dominance is problematic for two reasons. On the basis of which hand is moving, the left, demarcating is the dominant hand. However, in the signs adjacent to the measure stick sign, it is the right hand that is moving and dominant. In fact, this is the case in most AdaSL signing of all signers I have filmed. All informants are right-handed and typically use the right hand in one-handed signs. If a non-dominant status is assigned to the right, measuring stick hand, then we have to assume that in measuring stick signs are somehow specified for a temporary switch of dominance, which seems unlikely. In addition, the distribution of handshape suggests that analysing the left, demarcating hand as the dominant hand is not the right analysis. As we have seen above in §4.3.4.1, the measuring stick hand can take a marked handshape, i.e. the I hand, which has an extended little finger. In fact, in contrast to the left, demarcating hand, the measuring stick hand can take a variety of handshapes. Thus, the measuring stick hand can choose from a larger set of handshapes than the demarcating hand. This suggests that the measuring stick hand is not the non-dominant hand.

      The above discussion shows that the measuring stick signs differ in handedness from lexical and productive unbalanced signs with a dominant hand acting on a non-dominant SASS handshape. Consider example (4.6) which involves the MS:polished-lower-arm sign. This example is illustrated in Figure 4.23. This measuring stick sign consists of a demarcating C hand moving along the surface of the upheld, lower arm of the other hand. In the example, the line preceded by RH: represents the signs articulated by the right hand. The line preceded by LH: represents the signs articulated by the left hand.

(4.6)   RH: FISH   MS:polished-lower-arm(MS. hand) TOMATO
        LH: MS:polished-lower-arm(demark. hand)

        RH: B-hand-on-MS:lower-arm B-hand-on-MS:lower-arm
        LH: MS:lower-arm(measuring stick hand)-------------------
        'It is tinned fish with tomato. It has two labels on it.'

Fig. 4.23 FISH   **MS:polished lower-arm**   **TOMATO**

B-hand-on-ms   **B-hand-on-ms**

In the second sign of the utterance, the right hand, which is dominant in non-measuring stick signs, constitutes the measuring stick hand, an upright lower arm. The left, otherwise non-dominant hand strikes the surface of the right lower arm. In the second line of (4.6), which represents the presence of two labels on a tin, the distribution of handedness is reversed. Whereas in the full measuring stick sign in the first line of the example the measuring stick handshape is performed by the right hand (see Figure 4.23, first three pictures), in the second line the measuring stick SASS hand is articulated by the left hand (see Figure 4.23, last two pictures). This difference seems to correlate with the difference in iconic function of the moving, non-measuring stick hand. In full measure stick signs, the iconic function of the moving hand is to demarcate/present the measuring stick hand; it serves to emphasise the SASS meaning of the measuring stick hand. In the example in (4.6), the iconic function of the moving hand is to represent an activity executed on an entity of the size and shape expressed by the measuring stick hand, i.e. the sticking of a label on a tin; rather than enhancing the meaning of the measuring stick hand, the moving hand modifies the meaning of the measuring stick hand.

The one-handed variants of measuring stick signs deviate from another phonological tendency in sign languages. In general selected or active fingers tend to be in the same position, i.e. have the same specifications for joint flexion. One-handed measuring stick signs in AdaSL, however, go against this generalization. For example, in the one-handed MS:thumb tip (Figure 4.22), the function of the demarcating hand is taken over by the curved index, whereas the thumb is extended as in the measuring stick hand of the two-handed variant. The result is a handshape with two selected fingers (index & thumb), both in different positions (extended & curved). The remaining, unselected fingers are fully flexed. Having digits in three different positions, this handshape is not common in sign languages.[36]

Possible explanations for the violation of the Dominance Condition
To explain the deviant form of the two-handed measuring stick signs, four hypotheses can be considered. The first hypothesis is that measuring stick signs do not adhere to the Dominance Condition, because they are productive simultaneous multi-morphemic constructions, which are not governed by the Dominance Condition in the way morphologically simple, lexical signs are (cf. Miller, 1994; Vermeerbergen, Leeson &Crasborn, 2006). Such an analysis is supported by the observation that both the demarcating hand, as well as the measuring stick SASS hand are found to occur in non-measure stick signs. However, neither demarcating hands nor measuring stick or SASS handshapes can occur in isolation. Only when the two functions – measure stick and demarcation – are fused in one hand, as in the one-handed variants, can a measuring stick handshape occur without a demarcating hand. Whereas the two hands in genuine simultaneous constructions represent free, unbound signs, measuring stick signs consist of two bound morphemes. As such, they cannot be interpreted as (productive) simultaneous constructions.

The second hypothesis takes into account the origin of the measuring stick signs as borrowings from hearing Akan culture. The Dominance Condition is posited for sign languages, and may not be valid for gestures used by the hearing. The deviant form of measuring stick signs may thus mark their origin as borrowings. On the other hand, the Dominance Condition may be a physiological rather than a phonological condition (cf. Frishberg, 1983:81) and hence should, like the Symmetry Condition (Van

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[36] However, a number of sign languages have this handshape for the number SIX, e.g. Uganda Sign Language (Nyst, 1999), the Karachi form of Indo-Pakistan Sign Language (Zeshan, 2000:92). The similarities in the number systems of these sign languages does not seem to be coincidental. I think they are historically related, possibly as the result of Deaf education.

Gijn, Kita & van der Hulst, 1999), apply to co-speech gesture as well. If this is the case, the borrowing hypothesis is not plausible.

The third hypotheses concern the iconic functions of each hand.

Van der Kooij (2002) argues that iconic or motivated signs may not conform to the phonological system if the iconic motivation demands a specific phonological form.

In demarcating SASSes, in order to demarcate, one hand needs to act on the other, automatically resulting in an acting (and thus normally dominant) hand and a base or location hand. However, in order to iconically indicate the shape, one hand must in some cases take rather marked handshapes, an option normally available only for the dominant hand. These demands of motivation thus pose a conflict, as most hands cannot demarcate and at the same time be demarcated by themselves. To distribute handedness, the hand that is otherwise linguistically and physiologically non-dominant has to choose between being an acting, moving hand, or being a hand that takes a specific, marked handshape. In both cases, it violates the Dominance Condition. In this situation, the non-dominant hand apparently "prefers" to violate the Dominance Condition by performing a movement. The task of performing a marked handshape is left to the otherwise dominant hand.

This hypothesis, though adequate, is not fully explanatory. It does not explain the switch in dominance attested in example (4.6). In that example, the hands switch back to the usual distribution of dominance when the measure stick hand is modified in a way other than demarcation/presentation. In order to understand this switch, we need to step back a little and consider the difference between lexical unbalanced signs and measure stick signs. In the former signs, the manipulating hands in unbalanced signs that are not measuring stick signs modify the meaning of the (SASS) hand they manipulate. For example, in the sign YAM (Figure 4.24), the dominant 1 hand represents a knife peeling a yam, which is represented by the 1 handshape on the non-dominant hand. In other words, the dominant, moving hand represents an activity executed on the (entity represented by) the non-dominant hand.
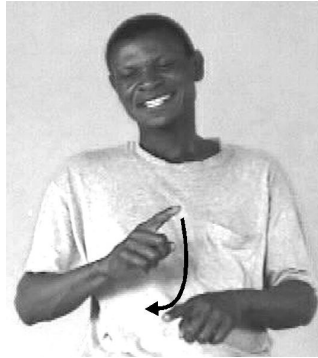
Fig. 4.24 YAM

In contrast, the moving, demarcating hand in measuring stick signs has a more pragmatic, indexical function. Rather than representing the execution of an activity on the measuring stick/SASS hand, the demarcating hand focuses the attention on a particular part of the arm/hand. As such, it emphasises or enhances the meaning of the measure stick handshape. Thus, non-measure stick unbalanced signs differ from measure stick signs in the type of manipulation represented by the moving hand; i.e. in the former the manipulation represents a modifying activity, in the latter the manipulation emphasises or enhances. The difference in the function expressed by the moving and manipulating hand also accounts for the distribution of handedness in (4.6). The moving hand represents the sticking of a label on the measure stick hand. As such, it modifies the measure stick hand, rather than merely presenting it. As a result, the measure stick hand is performed by the normally non-dominant, left hand. The different effect on the distribution of dominance of modifying manipulation on the one hand and presenting or enhancing manipulation on the other suggests that the distribution of dominance/handedness is determined by information structure in terms of foregrounding and backgrounding. Presenting manipulation in itself is a way of foregrounding the information expressed by the manipulated hand. In modifying manipulation, the information expressed by the modifying movement seems to be foregrounded with respect to the information expressed by the manipulated hand.

Whereas the Dominance Condition automatically defines a moving hand as the dominant hand, measure stick signs show that the assignment of dominance is determined by information structure, rather than by formal criteria. Foregrounded information is mapped on the dominant hand, backgrounded information on the non-dominant hand.

In short, the claim expressed in the Dominance Condition that in two-handed signs with only one hand moving, it is the moving hand that is dominant cannot be maintained for AdaSL measuring stick signs. The

ambivalent distribution of movement and marked handshapes, and the information structure of AdaSL measuring stick signs suggest that the distribution of dominance in lexical signs is motivated by information structure rather than a phonological condition.

4.3.5. Simultaneous combinations of a mouthing and a manual sign of size and shape

In contrast to lexical signs of relative size (§4.3.2), the measuring stick signs discussed in the previous section aim at representing a more or less absolute size, a size that could be measured in centimetres, so to speak. Both types of signs follow the sign they modify. They are often combined in one utterance, modifying the same noun. This results in utterances that give information about both the absolute and the relative size of the entity. The combination of size and shape signs may take the form of a sequential structure, as in the following example, whereby the mouthing associated with the relative size sign(see Table 4.2) typically spreads over the measuring stick sign.

(4.7)   [abo-----------]
          BANANA MS:hand BIG
          'A relatively big banana of about the size of a hand'

Alternatively, the combination of size and shape signs may also take the form of a simultaneous structure, combining the mouthing of the relative size sign and the manual measuring stick sign but dropping the manual part of the relative size sign BIG, as in (4.8)below, illustrated in Figure 4.25.

(4.8)   [abo-*repeated*]
          BANANA MS:hand-------
          'A relatively big banana of about the size of a hand'

Fig. 4.25 MS:hand + the mouthing usually accompanying BIG[abo]

Whereas a banana of the size and shape of a hand is considered big by the signer, a bottle of the same size and shape is considered small, as becomes clear from the next example. The mouthing accompanying the sign MS:hand when commenting on a bottle of malt beer (which are smaller than most bottles) is the mouthing usually accompanying the relative size sign SMALL [spread lips, teeth closed + ttt].

(4.9)   [spread lips, teeth closed + ttt]
          BOTTLE MS:hand----------------
          'A relatively small bottle of about the size of a hand'

The sign MS:thumbtip was found with the mouthing usually accompanying SMALL meaning 'stock cube', when following SOUP and SWEET. The same sign with the mouthing usually accompanying BIG may mean 'sugar cube' when following SWEET, as in (4.6) below, illustrated in Figure 4.26.

(4.6)   [abo-*repeated*]
          SWEET MS:thumbtip
          'A sugar cube'

SWEET   MS:THUMBTIP+[ABO]
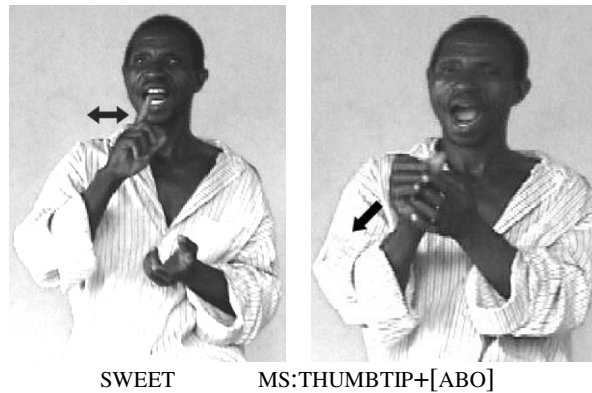
Fig. 4.26 'A sugar cube'

The combination of a manual sign indicating a more or less absolute size and an element on the mouth indicating a relative size is also found in NGT and other sign languages. In NGT, the element on the mouth is a mouth gesture, unrelated to the spoken language, rather than a mouthing. For example, the mouth gesture [pursed lips, tip tongue peeping out] indicates 'smallness'. The manual sign represents a particular size, shape and orientation by showing the outline of the size and shape. As in AdaSL, the manual signs are mostly two-handed, but in the case of small sizes and shapes, a one-handed variant is used. As discussed earlier, the AdaSL and NGT signs expressing a more or less absolute measure look very different since they use different types of iconic depiction. Whereas NGT uses outline depiction, AdaSL uses a combination of outline and entity depiction. As such, the AdaSL measuring stick signs are additional evidence of a tendency towards entity depiction in this language (cf. §2.6).

4.3.6. Internal modification

A miscellaneous category of size and shape signs contains size and shape elements that can be categorized as internal modification of existing signs. Thus, some signs emphasising the size or shape of a particular body part do so by holding the relevant body part and pulling it, really or virtually. For example, the long beak of the turkey is represented by a Closed bB" hand initially holding the nose and then virtually pulling it, by moving the hand away from the face, to the front (Figure 4.27). Similarly, in describing an (unidentified) cat-like wild animal, a signer makes reference to the characteristic ears of the animal by pulling them slightly (Figure 4.28). Descriptions of similar signs in other sign languages have not been found.

Fig. 4.27 LONG NOSE (of turkey) Fig.4.27 The ears of a wild animal

Some lexical signs were found that can be signed in a reduced form to express a reduced size. The reduced form of these signs may have an articulation that is more distal than in the standard articulation of the lexical sign, resulting in a smaller path movement, a bent handshape instead of straight handshape, or no repetition of movement – or a combination of tow or more of these properties. For example, the sign for a small knife to peel oranges is a modified, more distal form of the sign for CUTLASS, having a B^ hand instead of a straight one, and a smaller movement without repetition. Similar modifications for size are also found in other sign languages; see for example Sutton-Spence & Woll (1999:202) for BSL.

4.4.   Summary & discussion

Sign languages have not been reported to differ considerably in their expression of size and shape. However, the findings in the present chapter suggest that AdaSL differs significantly at least from some sign languages in this respect.

Firstly, the representation of containers and closed or containing surfaces in AdaSL is quite unusual as compared to the sign languages described in the literature so far. Smaller containers are represented by SASS handshapes through entity depiction, either using entity SASS handshapes located on the body or in space (§2.6), tracing entity SASS handshapes (§4.3.1) or entity SASS handshapes isolated in measuring stick signs (§4.3.4). Only when the container to be described is either larger than the size of (part of) the hand/arm or different from its shape a dynamic tracing sign is used (§4.3.1). Comparing the use of depiction types with the use of depiction types in NGT suggests that AdaSL makes use of entity depiction more frequently than NGT and probably also ASL. Thus, sign languages appear to vary not only in the visual image they select to represent a concept, but also in the type of depiction they use to represent the same visual image.

Secondly, unlike NGT, AdaSL makes use of a limited set of fixed signs to express the relative size of an entity. To what extent fixed, non-selective signs are used to express size in other sign languages is unknown at this point. Akan, the spoken language in Adamorobe, also makes use of such fixed terms of relative size. This parallel in the organization of the lexicon, in particular in combination with the fact that the AdaSL signs of relative size are accompanied by Akan mouthings, suggest that the use of fixed signs of relative size is a contact-induced feature in AdaSL.

Thirdly, like a large number of other sign languages, AdaSL makes use of the growth-line, running vertically, next to the signer. Unlike NGT and a number of other sign languages, the handshape used on the growth-line distinguishes humans from non-humans. This property may be related to a cultural taboo.

Fourthly, to express the absolute size and shape of entities of about the size and shape of an arm or parts of it, AdaSL typically uses measuring stick signs. These signs make use of entity depiction, together with outline depiction to express an absolute size and shape. Similar measuring stick signs are also used to express an absolute size and shape by hearing people in Southern Ghana. In fact, their usage is described for hearing populations all over Africa. In its use of measuring stick signs, AdaSL resembles hearing Akan conventional gesture more than it resembles the sign languages so far described in this respect. The measuring stick signs do not adhere to the Dominance Condition postulated by Battison (1978) for ASL. The distribution of dominance in these signs is predicted correctly by a generalization based on information structure: foregrounded information is mapped on the dominant hand, backgrounded information on the non-dominant hand.

Lastly, a number of signs were found in which one or more phonological parameters are modified to express a modified or unusual size and shape. Thus, body parts may be (virtually) pulled to depict an unusual extent. To the best of my knowledge, this strategy has not been reported for other sign languages. Other signs may have a reduced articulation to express a reduced size. This is also found in other sign languages, for example in NGT.

In conclusion, although AdaSL uses expressions of size and shape also reported for other sign languages, there are also significant differences. The 'preference' for entity depiction in AdaSL is such a difference, for which, at present, only a hypothetical explanation can be offered. More importantly, this finding indicates the need for more in-depth research into the dynamics of iconicity in sign languages. The intriguing properties of the expression of size and shape in AdaSL, that is, the use of relative size signs, the use of mouthings of relative size, the use of measuring stick signs and

possibly the use of handshapes distinguishing humans from non-humans on the growth-line, can be attributed to the intense contact between AdaSL and the speech and gesture of the wider Akan speaking culture.

5. EXPRESSION OF MOTION

5.1. Introduction

The present chapter concerns the expression of motion in AdaSL. In spoken languages cross-linguistic tendencies have been identified in the expression of motion. Considerable similarity has been found in the expression of motion in sign languages as well. This similarity is found in such a large number of sign languages that it is tentatively assumed to be a universal feature of sign languages. The similarities found in languages within one modality, sharply contrast with the differences found between languages in the spoken and the signed modality. In the following section, the expression of motion in AdaSL will be described and compared to tendencies in spoken and sign languages. The AdaSL data will be compared in some detail with the expression of motion in Akan, as this is the main spoken language in Adamorobe.

Talmy (1985, 1991) defines a motion event as a situation in which an entity moves either across space, changing its initial location (translative motion), or within space without changing location (contained motion). He distinguishes between spontaneous motion and caused motion. The former is self-initiated by animate beings. It is usually expressed by an intransitive verb as in the sentence *the child comes*. The latter is caused by an external agent and usually expressed by a transitive verb as in *the man brings the child*. Talmy distinguishes, among other things, the following conceptual elements of motion.

Figure   the object whose path is specified
Ground   the reference point with respect to which the Figure's path is specified.
Path   the course followed by the Figure with respect to the Ground
Cause   whether the motion is agentive or not
Direction   the deictic component of motion
Manner   the way in which the motion is executed

Comparing the expression of motion in a large number of spoken languages, Talmy (1985, 1991) finds that they can be classified in two major types according to how the Path of motion is encoded. Thus, verb-framing languages encode the Path of motion in the main verb of a clause expressing motion. Satellite-framing languages encode the Path of motion in a non-main verb element, whereby the main verb usually encodes Manner of motion. An example of a verb-framing expression of motion is found in (5.1).

(5.1) She left the house running.

An example of a satellite-framing expression of motion is found in (5.2).

(5.2) She ran out of the house.

In (5.1), the Path is expressed by the main verb 'left' and in (5.2), the Path is expressed by the non-main verb element 'out of'. Typically, spoken languages do not encode Manner and Path of motion in a single element (Talmy, 1985). A type of language that does not straightforwardly fit this classification are serializing languages (Ameka & Essegbey, 2006). In these languages, Manner and Path are typically expressed by separate elements as well, but both elements are verbs of equal status. Serial verb constructions have been described for a number of sign languages, as well as for Akan, the dominant spoken language in Adamorobe. A closer look at structural characteristics of serial verb constructions will be relevant for the description of the expression of motion in AdaSL in §5.4.

A serial verb construction consists of two or more verbs expressing one conceptual event in a clause. Such constructions are found in several linguistic regions, including in South East Asian, Oceanic, African-Caribbean Creole and West African languages and sign languages. There is no consensus in the literature on which criteria should be used to distinguish serial verb constructions from other clauses with more than one verb. Typically the following characterizing tendencies are mentioned. In serial verb constructions, verbs are 1) not marked for sub- or co-ordination, 2) only once overtly marked for subject and tense, 3) strictly ordered, 4) negated by one negation. In addition, the verbs form a prosodic unit (Sebba, 1994; Ameka, 2005).

This chapter deals with the expression of motion in AdaSL, with an emphasis on translative motion, both spontaneous and caused. In §5.2, the expression of motion in the sign languages studied so far is discussed, whereby the sign languages of large Deaf communities are compared to other types of signing, such as home sign languages and the young Nicaraguan Sign Language. In §5.3, the expression of motion in Akan is discussed briefly. In §5.4, I describe the expression of motion in AdaSL. Amongst other things, I discuss the role of classifier predicates (§5.4.1), and the function of directionals and their generic translative motion semantics (§5.4.2). In §5.4.3, I discuss verb sequences expressing motion and the marking of Cause of motion in these sequences. In §5.4.4, it is considered to what extent the contact situation has motivated the presence of the verb sequences. In §5.4.5, I introduce in short the characteristics of spatial projections in AdaSL. The findings are discussed in §5.5.

5.2.   The expression of motion in sign languages

5.2.1. Spatial mapping and perspective

The expression of motion crucially interacts with space. In sign language research as well as gesture studies, a distinction is made between signing including the signer in the signing space and signing excluding the signer from signing space (McNeill, 1992, for co-speech gesture). In an extensive treatment of spatial mapping, Liddell (2003) distinguishes amongst others three types of spatial projections in ASL: real space projections, surrogate space projections and token space. In real as well as surrogate space projections, the space of the event is mapped on the (perceived) real space surrounding the signer. Both in real and surrogate space projections, the signer is included in the signing space. Thus, a point to the signer is interpreted as a point to the referent mapped on the person signing. This referent may be the signer her/himself (a real space projection) or another referent (a surrogate space projection). Thus, when a signer shifts to the role of a referent other than her/himself, this results in a surrogate space projection.

In token space projections, the event space is projected on non-real size space, the limited plane in front of the signer. Entities are mapped on the hands, typically resulting in a representation of the entity on a highly reduced scale. Similarly, distances between entities as well as their movements are miniature versions of the actual or fictitious distances and movements. In token space projections, the signer is excluded from the signing space. Typically, token space involves the use of entity classifier predicates expressing motion and location. Real space and surrogate space projections typically involve whole body signs and handling classifier predicates. Whole body signs are signs in which the a larger part of the upper body of the signer is active in the articulation of the sign. Other terms for whole body signs are reference projections or body classifiers (Supalla, 1990).

5.2.2. Iconically motivated handshapes expressing motion: classifiers

Sign languages are articulated in a manual-spatial modality. Being articulated in space, they can iconically represent in signing space movements and locations of a narrated event through spatial modification. Exploitation of this possibility is most strikingly exhibited in classifier predicates expressing motion (Engberg-Pedersen, 1993; Supalla, 1986;

Zwitserlood, 2003). [37] In such predicates a moving entity is projected onto
the hand, whereby the movement of the hand in space represents the motion
of the entity. In the literature one often finds the example of a B hand
moving side to side and forward to express the path of a vehicle on a
winding road. The classifier handshape can either be an entity classifier,
standing for the represented entity (e.g. the car in the previous example), or a
handle classifier showing the handling of (part of) the entity represented.
Entity classifier predicates convey spontaneous motion of an entity, whereas
handle classifier predicates convey caused motion of an entity (Zwitserlood,
2003). The choice of handshape thus signals whether or not the motion of an
entity is caused by an external agent. The same correlation with entity and
handle classifiers has been attested in co-speech gesture (McNeill, 1992).
Classifier handshapes can occur in spatial verbs that convey the motion of an
entity in space, or in agreement verbs that convey the (often abstract)
transfer of an entity from one argument to another.[38] The spatial inflection of
the sign indicates the locative or pronominal arguments of the sign. An
example of a classifier construction in NGT is given in (5.3) and illustrated
in Figure 5.1.[39]

Fig. 5.1 An example of a classifier construction in NGT

(5.3)   SKID:CL-vehicle SOMERSAULT:CL-vehicle BUMP:CL-vehicle.rep
         'The car takes off fast, skids, somersaults and bumps back on its
         wheels.'

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[37] The terms classifier construction have for a long time been controversial, but none
of the proposed alternatives has gained wide-spread acceptance as yet. Therefore, I
will be using the classifier construction throughout.

[38] This chapter concerns the expression of actual motion. Therefore, the expression
of metaphoric motion or transfer as found in agreement verbs falls outside the scope
of this chapter. Agreement verbs in AdaSL include MARRY (Fig. 3.10), CURSE,
TELL, SEE, and INSULT. MARRY, TELL, and INSULT can be directed towards
or away from the signer. A reciprocal form of the normally one-handed INSULT is
made with two alternating hands oriented towards each other on the lateral axis.

[39] I thank the authors and publisher of Koenen, Bloem, Janssen & van de Ven (2005)
for their kind permission to use this illustrated example.

Classifier verbs of motion form semantically "heavy" units, in the sense that various aspects of the motion event may be expressed simultaneously, such as Manner, Path and Figure of motion. Thus, in (5.3), encoded in the classifier construction are the Manner of motion (driving in an uncontrolled way), the Path of motion and the Figure (a vehicle). Expressing Path and Manner in a single verb form, sign languages differ from spoken languages, which typically separate Manner and Path (Talmy, 1985; Slobin & Hoiting, 1994). The availability of two independent articulators increases the possibilities for the simultaneous expression of different aspects of a motion event. The formal representation of the elements of a classifier predicate and the difference between productive and lexical forms is the subject of an on-going debate where proposals range from schematic visual representations to agreement markers realizing abstract features (see e.g. Engberg-Pedersen, 1993; Cogill-Koez, 2000, Zwitserlood, 2003; Liddell, 2003; Schembri, 2003).

Classifier predicates expressing motion occur in all large sign languages thus far described, including African sign languages like Hausa Sign Language (Schmaling, 2000) and Namibian Sign Language (Morgan, Liddell, Haikali et al, 1991). In fact, many researchers take their occurrence to be a universal, modality-specific feature of sign languages (Aronoff, Meir, Padden & Sandler, 2003). Such a view is supported by research on gestures of non-signing hearing adults and children, as well as by studies on home signs, where rudimentary classifier-like structures are also observed. Non-signers, home signers, and signers of the emerging Nicaraguan Sign Language all use iconically motivated handshapes reflecting properties of a moving entity in their gesture or signing.[40] On the one hand, this confirms that the occurrence of classifier predicates in large sign languages is modality-driven. On the other hand, however, gesture, home sign and sign languages of large Deaf communities appear to vary considerably in their

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[40] A frequently used means of eliciting iconically motivated handshapes expressing motion is the Verbs of Motion Production Test. In the VMP-test, originally designed by Supalla (1982) to assess language proficiency in ASL, persons are asked to tell what they see in very short animated films showing objects moving in specific ways. The VMP-test concentrates on objects moving by themselves and thus does not have the objective of eliciting handle classifier handshapes (Morford et al., 1995). A focus on data specifically eliciting classifier handshapes risks at creating an exaggerated impression of their frequency in sign languages. Motivated handshapes representing a moving object are found in no-speech and co-speech gesture of hearing, non-signing native speakers of English (Morford et al.1995; Schembri, 2003). Home signing children also use motivated handshapes representing moving objects in response to the VMP-test of Supalla et al. (1990) (Singleton et al., 1993), as well as in spontaneous signing (Morford et al, 1995; Zheng & Goldin-Meadow, 2002).

usage of such motivated hands. The following observations have been made in the literature with respect to the development of classifier constructions in types of sign languages. Firstly, home sign languages are found to differ from co-speech gesture in being more systematic in the selection of the appropriate handshape (Singleton et al., 1993; Zheng & Goldin-Meadow, 2002). Moreover, home sign and the emerging Nicaraguan Sign Language differ from Spanish co-speech gesture as well as from Spanish Sign Language in the packaging of motion elements: while Spanish co-speech gesture and Spanish Sign Language (LSE) both combine Manner and Path elements in a single gesture/ sign (Senghas & Littman, 2004), home signers, early signers, and, to an increasing degree, later signers of Nicaraguan Sign Language tend to segment these elements (Morford, 2002; Zheng & Goldin-Meadow, 2002 for home signers; Senghas, Sotaro & Ozyürek, 2001, for Nicaraguan Sign Language). But Spanish co-speech gesture also differs from LSE. Whereas Spanish co-speech gesture combines Manner and Path in a holistic gesture, signers of LSE do so by packaging the Manner and Path elements in a structured, combinatorial way. The decrease in simultaneous packaging of motion elements found in home sign languages and in Nicaraguan Sign Language as compared to co-speech gesture and LSE is in the segmentation of relevant elements, a first step towards the systematic combinatorial structures found in older sign languages, Senghas & Littman (2004) argue. Secondly, another interesting development attested in Nicaraguan Sign Language is the increase of the use of entity classifier handshape in younger generations of signers, whereby the use of handle handshapes remains stable (Senghas et al., 1994). If this development is characteristic for the development of sign languages in general, then the frequency of entity classifiers may turn out to be a way of estimating the time-depth of a sign language (relative to other sign languages). Thirdly, commenting on the absence of an extensive system of classifier constructions in home sign languages, Morford (2002:14) hypothesizes that the development of classifier system for the expression of motion "…is only possible once other characteristics, such as a complex system of deixis and anaphora, have emerged".

Variation in classifier predicates across sign languages of large Deaf communities is found in the actual form of the classifier handshapes, the number of classifier handshapes and the degree of conventionalisation of the system. Aronoff et al. (2003) show that ASL and Israeli Sign Language differ in the relative abstractness of their entity classifiers and argue that this difference is the result of a difference in age of the two sign languages. In contrast to both ASL and Israeli Sign Language, Indo-Pakistan Sign Language uses a very restricted paradigm with only two entity classifier handshapes (Zeshan, 2003). The island-based sign language Providence

Island Sign Language reportedly does not make use of classifier predicates at all (Washabaugh, 1986).

In short, motivated handshapes representing moving objects are found in gesture, home sign languages, an emerging sign language and sign languages of large Deaf communities. An initial segmentation of motion elements, leading to a reduced degree of simultaneous packaging, may precede the development of highly simultaneous, systematically combined classifier constructions in sign languages. The use of entity classifier construction is found to increase through time in the case of Nicaraguan Sign Language. According to Morford (2002), the development of a classifier system may be correlated with the development of a complex system of deixis and anaphora. Variation in the classifier systems of sign languages of large Deaf communities concerns the degree of conventionalization, the arbitrariness of the attested forms, and the number of classes distinguished. Aronoff et al. (2003) suggest that variation in the use of classifier predicates across large sign languages is related to their age. It is not clear whether this factor can account for the highly restricted use of entity classifier constructions in Indo-Pakistan Sign Language. Although most large sign languages use entity classifier constructions for the expression of motion, the presence of an extensive, conventional system of entity classifier predication appears not to be a universal feature of deaf sign languages.

5.2.3. Non-classifier motion signs

Productive classifier constructions are not the only constructions that sign languages may use to express motion. Thus, sign languages may have motion signs that use a classifier handshape which is no longer productive, i.e. the handshape of the sign has become fixed and does no longer change according to which type of entity moves. An example of such a motion sign with a frozen classifier handshape is ASL FALL. This handshape is performed with the V hand, which in the productive classifier system represents the legs of a biped. However, the sign FALL with the V hand is now used to express the falling of bipeds as well as of entities with more or less than two legs. Another example of a type of motion sign with a non-classifier handshape is GO AWAY in Ghanaian Sign Language (G.N.A.D., n.d.) This sign has an Open 1 hand that closes to a Closed 1 hand (Figure 5.2).
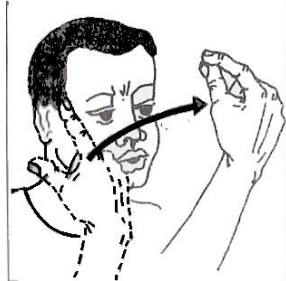
Fig. 5.2 GO AWAY (Ghanaian Sign Language)

Yet another type of sign expressing motion, found in Indo-Pakistan Sign Language, are lexical signs with overlaid movement. Thus, lexical signs can be moved through space thereby representing the path motion of the entity. Thus, moving the lexical sign FISH through space expresses the movement of a fish from one location to another (Zeshan, 2000).

5.2.4. Serial verb constructions

Series containing a manner verb and a path verb expressing motion are found in several sign languages, including ASL, NGT, and Nicaraguan Sign Language (Senghas et al., 2003; Slobin and Hoiting, 1994, 2003; Supalla, 1990). In the reported cases, the manner verb typically is a whole body sign, followed by a "relatively unmarked classifier" (Supalla, 1990:142) expressing Path. Unlike productive classifier constructions, whole body signs do not support spatial inflections in ASL and NGT (Supalla, 1990; Slobin and Hoiting, 1994). An example of a serial verb construction in ASL is given in (5.4).

(5.4)   RUN ZIG-ZAG-UP:CL:PERSON
         'A person runs up-hill.'

The segmentation of manner and path may have a cognitive motivation, reflecting the cross-linguistic tendency to separate these two motion elements (see §5.1). The segmentation may also have an articulatory motivation, as suggested by Supalla (1990). Manner signs in ASL and NGT –and probably many sign languages- are whole body signs, that is, in addition to the hand, other parts of the upper body are involved in the articulation of the sign as well. As whole body signs cannot show the Path or Direction of motion, an additional spatially inflecting sign is needed to express Path or Direction, leading to a serial verb construction.
An extended serial verb construction has been described for NGT. To express motion across a boundary in NGT, e.g. across a border, or into a containing region, the manner + path series is extended with a plain verb like

ENTER, EXIT, and CROSS. An example of such an extended serial verb construction involving the crossing of a boundary is given in (5.5).

(5.5)   MAN RUN APPROACH ENTER HOUSE
         'The man ran into the into the house.'

In NGT, additional serial verb constructions are found, consisting of a plain verb with specific semantics, followed by an agreeing verb with more generic semantics, i.e. CALL, GO, GIVE, TAKE (Bos, 1996). These include motion and non-motion expressions. A causative serial verb construction is reported for Nicaraguan Sign Language by Kegl et al. (1999).

5.3.   The expression of motion in Akan

As has already been mentioned, the dominant spoken language in Adamorobe is Akan (§1.2). Being the main contact language of AdaSL, a description of the expression of motion in Akan may be relevant for a full understanding of the expression of motion in AdaSL.
Like in many spoken languages, motion can be expressed by a single motion verb, as exemplified in (5.6) below.

(5.6)   Kofi a-ba
         Kofi PAST-come
         'Kofi has come'

Besides single verbs expressing motion, Akan uses serial verb constructions expressing translative motion (Christaller, 1875; Hellan, Beermann & Andenes, 2003; Osam, 1994, 2004). In this respect, Akan resembles the sign languages discussed in §5.2.3. Two examples of serial verbs expressing motion are presented in (5.7) and (5.8).

(5.7)   Kofi   bɛ-fa   nwoma no   a-ba   ntɛm
         Kofi   FUT-take book   the   CON-come   quickly
         'Kofi will bring the book quickly'

(5.8)   Akwadaa no   wéa   kɔ   dan   no   mu
         Child   DEF   crawl:HAB   go-HAB   room DEF   containing-region
         'The child crawls into the room' (Ameka & Essegbey, 2006:362)

Akan expresses spontaneous motion in a serial construction of a manner and a path verb, as in (5.2). The use of *fa* or *de*, both meaning 'take', in the first position of a verb series yields a causative interpretation, as in (5.1) (Christaller, 1933:68). In addition, Akan has two prefixes marking verbs for andative *(kɔ)* or venitive *(bɛ),* as exemplified in (5.9) en (5.10), taken from

Osam, 2002. The prefix -kɔ- indicates a movement away from the deictic centre preceded the event expressed by the verb root, whereas the prefix -bɛ- indicates motion towards the deictic centre.

(5.9)   Kofi   kɔ-fa-a   sika   no
         Kofi   go-take-COMPL money   DEF
         'Kofi went and took the money.'

(5.10)   Kofi   bɛ-fa-a   sika   no
         Kofi   come-take-COMPL   money   DEF
         'Kofi came and took the money.'

The prefixes are grammaticalized forms of the lexical verbs *kɔ* 'to go' and *ba* 'to come' respectively (Osam, 2002).

5.4.   The expression of motion in AdaSL

The data presented in the following sections are taken from 1) the spontaneous AdaSL data, and 2) the elicited retellings of the Sylvester and Tweety cartoons, as described in §1.8.2.[41] Firstly, the question as to whether classifiers are used in AdaSL to express motion will be considered. Secondly, a general class of verbs that are used to express the direction of movement, called "directionals" here, will be presented. This will be followed by an analysis of constructions consisting of several verbs. I will consider to what extent the defining criteria for serial verb constructions apply to the verb sequences in AdaSL.

5.4.1. Iconically motivated handshapes expressing motion: classifiers?

In Chapter 2, iconic handshapes in lexical signs were distinguished from arbitrary handshapes. In that chapter, as well as in Chapter 4, AdaSL was found to make extensive use of entity depiction, as compared to other sign languages. The current section investigates to what extent iconically motivated handshapes occur in constructions expressing motion and location, that is, in classifier predicates as described for other sign languages (see §5.2).
A difference in the distribution of handle and entity handshapes is attested. They are therefore treated separately in the next two sub-sections.

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[41] For the elicitation of expression of motion, cartoon retellings were preferred over the VMP-test as they represent more natural language data and would thus be more representative of actual linguistic behaviour.

5.4.1.1. Handle handshapes

In sign languages, signs expressing motion with handle handshapes typically express manipulated or transitive motion (§5.2.1). In AdaSL, the default option for the expression of transitive or manipulated motion is not a productive construction with a handle handshape, but rather a general directional sign with an arbitrary or conventional handshape as will be discussed in §5.4.2. Although infrequent, signs expressing motion with handle handshapes do occur in the data. All cases found are articulated in space; no signs expressing motion with handle handshapes were found on the body. In (5.11), the two B" hands in TAKE:CL-round (see Figure 5.3, first picture) indicate the round shape of the bowling ball being manipulated. The same hand configuration is maintained in LIFT^THROW:CL-round (see Figure 5.3, second picture), but the hand configuration looses its iconic orientation in the following sign ENTER (Figure 5.3, third picture).

Fig. 5.3 TAKE:CL-round   LIFT^THROW-ball   ENTER

(5.11)   MOVE FLY-TO-SIDE BALL TAKE:CL-round LIFT&THROW:CL-round
          ENTER
          '(The bird) flew to the side, took a ball and threw it inside.'

 In (5.12), the sign PUT:CL-round (see Figure 5.4, second picture) conveys the round shape of a bowl. The sign for bowl has the same handshape and is illustrated in the first picture of Figure 5.4.
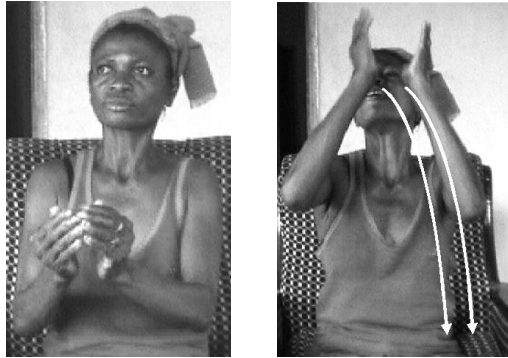
Fig.5.4 BOWL   PUT:CL-round

(5.12)   INDEX₁ BOWL INDEX₁ PUT:CL-round
          'I put the bowl there.'

In (5.13), the signer explains the iconic motivation of the sign for TEACHER. This lexical sign consists of two balanced 1 hands that move downwards, representing the punishment of pupils by beating with a stick. To clarify the act of beating with a stick, the signer uses a productive sign with a handle handshape (Closed bB") to represent the beating with a stick in an alternative way.

(5.13)   BOOK TEACHER(=HIT:CL-1)… STICK HIT:CL-closed bB", TEACHER
          'School teachers…they hit with sticks (that is why the sign is) teacher.'

In (5.14), the signer explains the concept of a kerosene stove. The last sign in this example has a bO hand, moving in a horizontal circle. The handshape represents a hand holding a match lighting a stove. The wicks are placed in a circle on top of the cylindrical stove. The hand makes a circling movement to light the wicks of the stove.

(5.14)   HOT CYLINDER:CL-B"(TWO-HANDED) MATCHES CIRCLE:CL-bO
          'A cylindrical stove that you light on top.'

In short, signs expressing motion in space, whereby the Figure of motion is represented with a handle handshape, are found in AdaSL, although they are not very frequent. Non-lexical signs with handling handshapes were not found on body-related locations.

5.4.1.2. Entity handshapes

Entity handshapes in non-lexical signs expressing motion or location of an entity were extremely infrequent in the data. A difference in distribution was

found according to location type. Whereas a small number of entity handshapes was found in body-related motion signs, no such handshapes were found in signs articulated in the signing space. In this section, the latter aspect, that is, the absence of signs with entity handshapes in space is discussed first. Then, the few examples of entity handshapes expressing motion on body related locations are discussed.

In the spontaneous data no signs expressing motion were attested that combine Figure and Path in a single sign, as in the NGT classifier construction in (5.3). To make sure that this finding was not an artefact of the limitation to spontaneous data, signers were asked to retell cartoons that are known to elicit motion representations from previous studies. The Tweety and Sylvester cartoons used here represent a subset of episodes from 'Canary Row' compiled by Sotaro Kita at the Max Planck Institute for Psycholinguistics (see §1.8.1). The AdaSL retellings of the 'bowling ball' cartoon were compared to retellings of the same episode in DGS (Nyst & Perniss, 2004). DGS is known to make frequent use of entity classifiers to represent motion events (Perniss, forthcoming). The collection of the DGS data is described in Perniss (forthcoming). In general, the German signers were found to represent more events than the AdaSL signers. This is probably related both to the fact that the AdaSL signers are not very accustomed to watching and commenting on cartoons, as well as to their young age (11-13 years old).
Also, the DGS signers used more than one sign to represent one event, up to a maximum of four signs. In contrast, the AdaSL signers used a maximum of two signs to represent one event. Table 5.1 gives an overview of the types of signs that were used to represent a motion event. Directional indexes were defined as signs with a 1 hand or a B hand tracing the path of an entity, without representing features of the moving entity. These were found both in DGS and AdaSL. Generic directionals were only found in AdaSL. They form a set of signs with very basic motion meanings and will be discussed in detail in the next section, in §5.4.2.

SL	Signer	# of entity classifiers	# of directional indexes	# of generic directionals	# of whole body signs	Total # of signs	Total # of events
DGS	FB	6	6	-	5	17	13
	GL	7	7	-	5	22	13
	GN	10	5	-	6	19	14
AdaSL	OW	-	2	4	9	11	10
	KW	-	1	3	9	10	8
	AG	-	-	3	5	6	6

Table 5.1. Type of signs used to express motion events

Table 5.1 shows that the DGS signers regularly used entity classifiers to represent motion events. In contrast, AdaSL signers did not use entity classifiers in their retellings. In the cases where DGS signers use an entity classifier, AdaSL signers use generic directionals, whole body signs or directional indexes. For example, in the DGS retellings, the two-legged entity classifier, consisting of an extended index and middle finger, was found in combination with a walking and a climbing manner. In the AdaSL retellings, not a single occurrence of the two-legged entity classifier was found. This absence is particularly striking as the use of two-legged entity classifiers have been attested in a wide number of sign languages. In Indo-Pakistan Sign Language, only two entity classifier handshapes have been found, one of which is the two-legged classifier handshape representing two-legged referents. The use of gestures resembling the two-legged classifier has been attested in the co-speech gestures of hearing Swiss (Boyes-Braem & Curau, 2004). Typically, events that DGS signers describe using an entity classifier, are described by means of either a whole body sign or a generic directional in the AdaSL retellings. Consider, for example, the event in which the cat is walking up and down in front of a building: this event is represented by the two-legged entity classifier mentioned above moving on the lateral (left-right) axis in DGS, whereas the AdaSL signers use the whole body sign MOVE, which is spatially modified on the lateral axis, i.e. the upper body leans repeatedly to the left and then to the right. Other whole body signs spatially modified on the lateral axis in the AdaSL retellings are FLY and a combined form in which the hands sign BIG-BELLY and the elbows sign MOVE with the lean of the upper body simultaneously expressing the spatial inflection. Hence, the absence of entity classifiers in the AdaSL retellings, in contrast to the DGS retellings, confirms the patterns found in the spontaneous data.

Whereas entity handshapes in productive constructions in space were virtually absent in the data, they were found to occur incidentally on body related locations. In the data, four (tentative) entity handshapes expressing motion in relation to the body were found. In (5.15), illustrated in Figure 5.5., the signer discusses the use of an orange as a deodorant. The sign she uses to express that the orange is rubbed in the armpit has a Closed B hand (see the last picture in Figure 5.5). This Closed B hand iconically depicts the size and shape of a piece of an orange, as represented by the measure stick sign MS:closed-B earlier in the utterance.
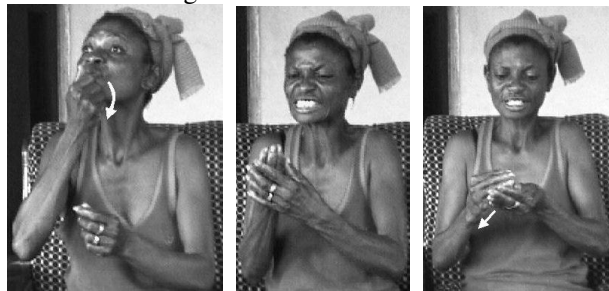
Fig. 5.5 ORANGE   MS:closed B   CUT:CLOSED-B
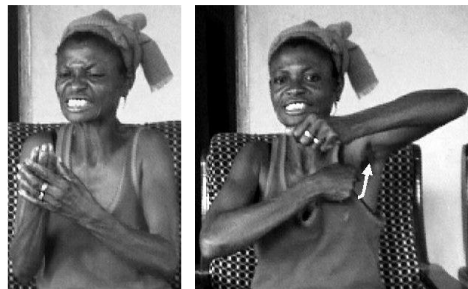
MS:closed B   [CLOSED-B-IN-ARMPIT]

(5.15)   ORANGE (…) MS:closed-B [CUT:closed-B] MS:closed-B **[CLOSED-B-in-armpit]**
          'The orange, the one you put under your arm (as a deodorant)'

The sign BIRTH in (5.16) is normally performed with an S hand, probably representing the human head (see §4.3.3). In this utterance, however, the sign BIRTH concerns the 'birth' of an egg. Hence, it is performed with a Closed B handshape, instead of an S hand. The sign shares its handshape with the adjacent measure stick sign MS:closed-B:BIG.

<u>eyes-up</u>
(5.16)   BIRD   EGG---- ENTER **BIRTH:**CL-**closed-B** MS:closed-B [imitates
         bird]
         'The bird lays an egg. It goes [imitation of the bird's action].'

(5.17)   STONE ABRUPT MS:closed-B:BIG [**Closed-B-touches-neck**]
         '(The dwarf) picks a stone, big like this, and throws it at you, hitting
         you in the neck'

(5.18)   TURTLE [**1-hand-in-neck**]
         '(one) puts a stick in the turtle's neck'

The signs expressing motion in (5.17) and (5.18) both refer to an object
contacting the back of the neck. In (5.17), this object is a stone, hence the
Closed B handshape. In (5.18), this object is a stick, hence the 1 hand.
In the examples (5.15-17), the handshape of the motion sign is identical to an
adjacent measure stick sign. In all the examples discussed so far, the motion
represented is motion caused by an external agent. With the exception of
(5.16), the motion is caused by the hand of a human or a dwarf. The
selection of an entity handshape for the expression of motion caused by (the
hand of) an external agent is cross-linguistically unusual. That is, in sign
languages, as well as English co-speech gesture, motion caused by an
external agent is typically expressed by a sign or gesture with a handle
handshape.
      Whereas the above four examples concern the expression of motion
on the body, four other examples were found of entity handshapes
expressing location or existence on the body. Thus, in (5.19), the utterance
consists of two S hands that are held close to the (wide-spread) eyes,
indicating that a mythical being has very big eyes.

(5.19)   [**S-hands-on-eyes**]
         'it has very big, round eyes'

In (5.20), the occurrence of boils under the arm and on the head is expressed
by holding a Closed B on each affected located.

(5.20)   [**Closed-B-in-armpit**][**Closed-B-on-side-of-head**]
          'a boil under her arm and one on her head'

Describing a necklace consisting of beads, a signer firstly traced a line
around the neck with a 1 hand, then indicated with a measure stick sign that
big elements of the size of the thumbtip were involved, consequently tracing
the line around the neck once more, but this time with the MS:thumbtip
handshape.

(5.21)   [1-hand-traces-path-around-neck] [**MS:thumbtip-around-neck**]
         [MS:thumbtip [around neck]]
         'A chain of beads'
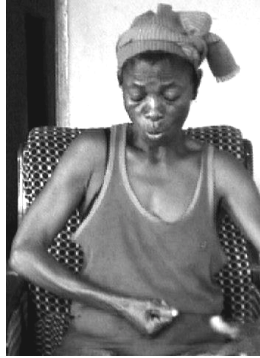
Fig.5.6 [S-hand on belly]

In (5.22), an S hand is placed on the location of the belly button, indicating
that a person has a big belly button.

(5.22)   TALK [**S-hand on belly**]
         '(That) hearing (man) with the big belly button'

Although handle and entity handshapes cannot always be disambiguated,
there appears to be a complementary distribution of handshape types in
productive constructions. Whereas productive constructions with handle
handshapes occur in space, but not on the body, productive constructions
with an entity handshape are not found in neutral space, but are occasionally
found on the body. Such a complementary distribution of entity and handle

handshapes over location types is not attested in lexical signs. Entity and handle handshapes are found both in space and on the body in lexical signs.[42]

In short, handle handshapes in productive constructions are only found in space. Entity handshapes expressing motion in space occur neither in the spontaneous data nor in the cartoon-retellings. Only a few examples of entity handshapes expressing motion on body-related locations are found. As has already been stated, the semantic or entity classifier predicates expressing motion and location in space are commonly used in sign languages of large Deaf communities. The absence of entity handshapes expressing motion in space in the AdaSL data is therefore striking. This finding also contrasts with the preference for entity depiction attested in the fixed lexicon (see §2.6) and in the expression of size and shape (see §4.3.4.3) in AdaSL.

    A few more aspects of classifier constructions are noteworthy. First, as most productive constructions with entity handshapes are adjacent to (measure stick) signs with identical handshapes, the entity handshapes in at least some of the productive constructions may be the result of assimilation. For example, in (5.17), the non-lexical construction [Closed-B-touches-neck] is preceded by the measure stick sign MS:closed-B:BIG. The handshape of the non-lexical construction may have come about under the influence of the handshape of the preceding measure stick sign. Thus, forward and backward assimilation may account for the meaningful handshapes in the signs expressing motion in (5.15-17) and (5.21).

    Secondly, both handle and entity handshapes may represent motion caused by an external agent. In this respect, AdaSL differs from NGT and English co-speech gesture. On the basis of the spontaneous data of diverse types used in this study, we may safely conclude that AdaSL has no extensive, conventional system of productive entity classifier predicates.

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[42] The distinct distribution of handshape types over location types feeds the current debate concerning the evolution of lexical items in sign languages. Klima & Bellugi (1979) describe the process of classifier constructions "freezing" into lexical items. The process has subsequently been taken to be at the root of all lexical items with classifier handshapes. In this analysis, signers in need of productive usage of the frozen or lexicalised sign temporarily "decompose" the sign to partly modify it. Zwitserlood (2003) argues against such an analysis, instead proposing a direct genesis of lexical items with classifier handshapes, without an intervening stage as productive classifier construction. The occurrence of lexical items with entity handshape with an iconic movement in space and the absence of productive constructions with the same features points in the direction of a direct genesis for the lexical items in AdaSL.

5.4.2. Directionals

As has already been illustrated in Table 5.1, a small group of signs with very general semantics accounts for a large proportion of expressions of directional motion in the data. These signs seem to be the unmarked way to express directional motion in AdaSL. I will call these signs "directionals". The directionals identified in the data are glossed as FROM, TOWARDS, PATH, ENTER, and ABRUPT. These glosses are abbreviations of longer labels. FROM and TOWARDS are formally very similar, yet there appears to be a subtle, but significant difference in the deictic centres specified by each of these signs. This list may turn out not to be exhaustive, but it seems to cover the most frequent directional signs. These common directionals are discussed below.

MOTION FROM A REFERENCE POINT, glossed as FROM: One or two hands make a sweeping movement towards a locus, with the back of the hand facing the direction of the movement (see Figure 5.7). The handshapes assumed by the hand(s) are typically very lax and variable and include the Lax B hand, the 1 hand and the Lax open B+spr hand. The laxness and variation of the handshape in FROM, as well as its sweeping movement suggest that the handshape is not phonologically specified (see §2.5.3). The sign may be directed on the horizontal plane away from the signer, or it may be oriented upwards or to the side on the lateral axis (from left to right or vice versa). It was not found oriented towards the signer. Before illustrating the use of FROM in utterances, the sign will be distinguished from the formally similar TOWARDS.

Fig.5.7 FROM: initial and final position (signed by the left hand)

MOTION TOWARDS A REFERENCE POINT, glossed as TOWARDS: A lax 5/B hand or 1 hand makes a sweeping movement towards a locus, headed by the palm of the hand (see Figure 5.8). Like FROM, the handshape of TOWARDS is unspecified. Depending on orientation, location and context of the sign, it is

found with intransitive readings as 'come down', 'stay', 'get up', 'sit down',
etcetera, as well as with transitive readings as 'put (something somewhere,
e.g. things on your head to carry)', 'leave (something somewhere)'.
Examples (5.19-21) illustrate the use of TOWARDS to express intransitive
motion and (5.22) and (5.23) the use of transitive motion.

Fig. 5.8 TOWARDS –side: initial and final position

Form wise, FROM and TOWARDS (discussed below) are distinguished only
by their relative orientation, i.e. the part of the hand that faces the direction
of the movement. In FROM, the back of the hand faces the direction of the
movement. In TOWARDS, it is the palm of the hand that faces the direction
of the movement. This difference in orientation is accompanied by a
difference in deictic centre.[43] Whereas FROM focuses on the departure from a
particular reference point, TOWARDS focuses on the motion towards a
particular reference point. Thus, when no end location is specified for FROM,
the sign is interpreted as 'go (away)', 'leave (from the reference point)', or
'send away'. Similarly, TOWARDS is by default interpreted as 'come', or
'bring'. Specifying an end location for FROM results in a focus on the
movement towards the end location. A similar shift is found in English when
we compare 'I'm going' to 'I'm going home'. When both signs have the
same spatial inflection, for example moving vertically up in space,
TOWARDS implies a movement towards the deictic centre, read: signer, and
gets the meaning 'get up' (from the floor or a seat). FROM implies a meaning
away from the deictic centre and gets the meaning 'go up' (e.g. into the sky
or into a tree). Similar contrastive meanings are also found in FROM and
TOWARDS signs moving on the lateral axis, as in (5.28).

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[43] Thanks go to Els van der Kooij for suggesting that FROM and TOWARDS may be
different verbs, and to Maud Devos and Sander Steeman for helping to distinguish
the semantics of the two signs.

Below, examples of the use of from and towards will be given. In (5.24), FROM-side is used without specifying an end or goal location. This renders the interpretation of 'leave'. The spatial orientation of the movement of FROM indicates in which direction the spirit leaves.

(5.24)   QUIET (GSL) INDEX-up PRAY QUIET (GSL) LONG-TIME SPIRIT
         FROM-side
         'She keeps quiet and prays for a long time, and then the spirit
         leaves'

 In (5.23), an end location has been specified, yielding the interpretation of 'go to'.

(5.23)   FOREST-AREA FROM
         'She went to the forest area'

The utterance in (5.25) is part of a larger discourse about a particular rock near Adamorobe. In (5.25), FROM is implicitly understood to have this rock as its goal location, again yielding an interpretation of 'go to'.

(5.25)   CIRCUMCISION, CIRCUMCISION FROM NO, CIRCUMCISION NO FROM
         'Circumcision...if you're circumcised, you can't go, if you're not
         circumcised, you can go.'

Similarly, in (5.26), the farming field is the implicit goal location of the first FROM in the utterance. The second FROM is oriented towards the interlocutor –as indicated by the subscribed 2. Whereas the first instance of FROM expresses an intransitive, self-contained motion as in English 'go', the second FROM expresses transitive or externally controlled motion, as in English 'give'.

(5.26)   TOMORROW FROM CASSAVA FROM$_2$
         'Tomorrow I will go and then give you cassava'

The following examples illustrate the use of TOWARDS. In (5.27), FROM and TOWARDS move on the same lateral axis. A signer tells about a group of people that asked somebody a favour. That person refused. The group of people came back the next day to repeat their plea. Lacking a specified goal location, from is again interpreted as 'go' or 'leave'. The return of the group on the next is expressed by TOWARDS oriented towards the deictic centre, i.e. the person whose favour was asked for.

(5.27)   INDEX FROM-left SOON AGAIN (GSL) TOWARDS-right
         'They went and came back soon afterwards.'

In (5.28), FROM and TOWARDS are used with the same deictic centre again. With no goal location specified, FROM indicates that the mother leaves. In this example, towards is interpreted as 'stay' rather than actual motion towards the deictic centre.

(5.28)   MAN SEARCH FINE MARRY TAKE FROM-right:up CHILD-rep
          TOWARDS-left
          'A man, looking for a nice (woman), marries her and takes her away,
          while her children stay.'

In (5.29), the deictic centres of TOWARDS and FROM are not the same. The deictic centre of TOWARDS is the head of the signer and the deictic centre of FROM is the location of the signer. In the examples in (5.27) and (5.28), TOWARDS refers to spontaneous motion. In (5.30), TOWARDS refers to externally caused motion. The lack of specification for Cause of motion in generic directionals is discussed later in this section.

(5.29)   TOWARDS-head FROM
          'I put it on my head and go.'

An additional example of TOWARDS expressing spontaneous motion is given in (5.30).

(5.30)   KOFI-BOAHENE TOWARDS-side, TOWARDS-side
          'Kofi Boahene should come next to me here.'

An additional example of towards expressing externally caused motion is given in (5.31).

(5.31)   WATER TOWARDS$_1$
          'Bring me some water!'

MOTION ALONG A PATH, glossed as PATH: One or two 1 hand(s) trace(s) a, usually straight, path. Like FROM and TOWARDS, this sign has the general semantics of 'directed motion'. It is typically found with a movement related to the locus of the signer, as illustrated in Figure 5.9. Whereas FROM and TOWARDS have underspecified, lax handshapes, PATH has a more distinct handshape, i.e. a 1 hand. The tip of the index finger seems to trace out a basic straight path. In some cases, an extra 'swing' in the movement of PATH emphasises the speed of the movement. This modification is not possible in FROM and TOWARDS. Whereas FROM and TOWARDS emphasise the direction of the motion with respect to a deictic centre, PATH rather seems to emphasise the Path of motion. It appears to be neutral with respect to the deictic centre. Again unlike FROM and TOWARDS, PATH was found to be

used expressing intransitive motion only. It is part of the compound signs for BIRD (WINGS PATH-in-the-air) and AEROPLANE (VEHICLE PATH-in-the-air).
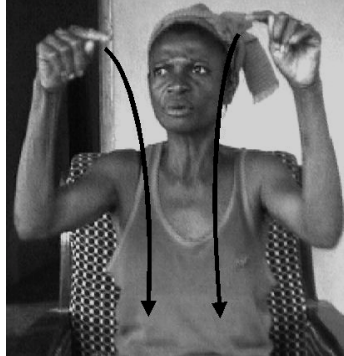
Fig 5.9 PATH-towards signer

The following examples, (5.32-34), illustrate the use of PATH. The emphasis on the path of motion as opposed to the direction with respect to the deictic centre is difficult to express in the English translation.

(5.32)   MORNING PATH-towards signer EVENING PATH-towards Aburi
             'In the morning they come here (to the village), in the evening they
             go back to (the town of) Aburi.'
(5.33)   WALK FROM SEE PATH-from-left-to-right
             'I walked and then I just saw (the bird) flying away.'
(5.34)   WALK PATH-centre EAT
             'I walk to this place and eat.'

ENTERING MOTION, glossed as ENTER: A B hand or 1 hand moves towards a locus, fingertips first (see Fig. 5.10). The sign is accompanied by the mouthing [ʃim], from Akan *hyɛ mu* 'fit inside', literally 'fix contain-region'. ENTER basically means 'entering motion' and may express spontaneous motion as in 'to enter' or motion caused by an external agent as in 'to put inside'. Signs derived from ENTER are BURY, BAG, 500-CEDIS and ROOM (see §3.4).

Fig. 5.10 ENTER

The utterance in (5.35) is taken from a text discussing *mmoatia*, mythical forest-dwelling dwarfs. According to the signer, these dwarfs may seize a person and lock him/her up in the rocks. In this example, ENTER expresses externally caused motion.

(5.35)   STONE BIG ENTER
         'They put you inside a big rock/ you enter into a big rock.'

In (5.36), is drawn from a signer who explained he caught a baby rat. In this fragment, ENTER likewise expresses externally caused motion.

(5.36)   SEE GROW ENTER CARRY-BAG COME
         'I thought I could let it grow (fat), so I put it in a bag and took it home.'

Unlike the former examples, in (5.37) ENTER expresses spontaneous motion.

(5.37)   MAN MANY ENTER-right
         'A lot of men entered.'

ABRUPT MOTION, glossed as ABRUPT: An O or S hand, optionally opening to an Open B+spr hand, combines with a directed path movement (see Fig. 5.11). ABRUPT is found with the transitive meanings of 'throw', 'send' and 'sprinkle', as well as with intransitive interpretations as 'fall' 'move-down-through-air'. The sign may thus basically mean something like 'move quickly/out of control in the specified direction'.

Fig. 5.11 ABRUPT: initial and final position

Example (5.38) is interesting in that it contains four directionals. The first instance of ABRUPT means 'throw/put down'. The second instance means 'jump up' or 'being catapulted up'. In the last case ABRUPT combines with TOWARDS to express the meaning 'fall down'. Note that in (5.39), ENTER expresses more or less the same meaning as the non-lexical, gestural sign preceding it.

(5.38)   BIG right-TAKE-left-ABRUPT-down ABRUPT-UP BIRD CATCH ABRUPT-
         DOWN TOWARDS-DOWN EAT
         'He went to pick a big one, threw it down, went up in the air, caught
         the bird, came down and ate the bird.'
(5.39)   <put-hand-in> ENTER TAKE ABRUPT-down SMALL DEAD
         'I put my hand in, pulled it (the rat) out, threw it on the ground, and
         after a short moment it died.'

The directionals discussed so far share a number of features. They have a lax handshape (a B hand, a 1 hand or an opening S hand in the case of ABRUPT), which does not reflect properties of the moving entity. The directionals typically inflect for points or loci in space to which referents are associated (cf. Engberg-Pedersen, 1993). Directionals agree with spatial loci associated with locations, e.g. ABRUPT-down IN (5.39), as well as with loci associated with persons or other entities, e.g. TOWARDS$_1$ in (5.31). They express very general motion patterns like 'motion from a point' glossed as FROM, 'motion towards a point' glossed as TOWARDS, 'abrupt motion' glossed as ABRUPT, 'motion along a path' glossed as PATH, and 'entering motion' glossed as ENTER. With the exception of PATH, the directionals seem to express Direction of motion, rather than Path. As directionals express very basic motion patterns, their interpretation is highly context-dependent. Moreover, the directionals are unspecified for Cause of motion, again with the possible exception of PATH. That is, they can be interpreted as expressing spontaneous motion or motion caused by an external agent. Thus, FROM may

mean 'go' or 'give', or even 'send'. ENTER may mean 'to put something inside' or 'to enter'. Directionals form the base of many lexical signs. Spatially inflecting directionals, with their basic motion patterns, are the default way to express translative motion in AdaSL. As such, AdaSL differs radically from most sign languages described so far, for which the frequent use of classifier constructions has been reported. Thus, the AdaSL findings show that a sign language is not compelled by its modality to develop entity classifier constructions to effectively express spontaneous motion in space.

5.4.3. Multiple verb constructions

As can be seen in the examples in the previous section, when directionals combine with other verbs, they typically occur as the final sign in such a sequences of verbs. Two types of verb sequences expressing directional motion are found in the data. As in other sign languages, sequences of a manner sign followed by a directional are attested (§5.4.3.1). The second type of verb sequence consists of a manipulation sign, again followed by a directional (§5.4.3.2). This type of verb sequence has not been described for other sign languages so far. Besides conveying its specific semantic content, the manner or manipulation sign specifies the sequence for Cause of motion.

5.4.3.1. Manner + directional

Signs expressing manner in AdaSL are typically whole body signs, like in ASL and NGT. The arms and/or legs of the signer often represent the movement or position of the limbs or other parts of the moving entity. In FLY, the arms of the signer represent the wings of a flying animal. In WALK, the legs and the arms represent the motion of the legs of a walking person. Sequences of a manner sign and a directional were found in the data, expressing both the manner and the direction of the motion.

Directionals in isolation do not encode Cause of motion. The addition of an intransitive manner sign removes the ambiguity with respect to what causes the motion, specifying the sequence for spontaneous motion. In (5.40), the last four signs, printed in bold, are RUN, FROM, MOVE-WITH-EFFORT and FROM. RUN, as well as MOVE-WITH-EFFORT express information about the manner of motion. FROM focuses on the departure from a deictic centre. All three signs express the direction of the motion, as they are all oriented in the same direction. Prosodically, the sequence of signs is not separated by any boundary marker, such as the sign FINISH or eye contact with the interlocutor (see §1.8.3). Rhythmically, they seem to form a unit within the utterance.

(5.40)   ANGRY STONE TAKE <size-and-shape-outline> ABRUPT FROM-up
         RUN-left FROM-left MOVE-WITH-EFFORT-left FROM-left
         'She got angry, picked up a stone, threw it (at the beehive). (The
         bees) came out and we ran away.'

Examples (5.25) and (5.26), repeated below as (5.41) and (5.42), contain a
sequence of WALK and a directional. WALK, articulated with both hands and
feet moving, expresses the manner of motion, PATH expresses the direction.
Again, the signs are not interrupted by any boundary marker and
rhythmically form a unit.

(5.41)   **WALK FROM** SEE PATH-from-left-to-right
         'I walked and then I just saw (the bird) flying away.'

(5.42)   **WALK PATH-**centre EAT
         'I walk to this place and eat.'

Also found in sequences are DRIVE-CAR FROM and FLY FROM.
Unlike NGT, there is in AdaSL no difference between constructions used to
express motion with and without crossing a boundary (cf. §5.2.3). In NGT,
as Slobin & Hoiting (1994) note, the expression of border-crossing motion,
such as English 'enter', 'exit', or 'cross', involves an additional sign as
compared to motion not crossing a border, as exemplified in (5.5). This
difference between AdaSL and NGT is probably due to a difference in the
inflectional possibilities of the signs expressing the crossing of a border.
Both ENTER and CROSS are plain verbs in NGT. Slobin & Hoiting predict
this to be typical for sign languages, because of the need to express the
Ground with the weak or non-dominant hand. Thus, a directional verb is
needed to express the direction of the motion, resulting in a sequence of
three verbs. The use of AdaSL ENTER contradicts Slobin & Hoiting's claim.
Unlike NGT ENTER, AdaSL ENTER does not express Ground with a weak
hand and is a directional verb. Unlike in NGT, in AdaSL no additional
directional verb is needed to indicate the direction of the motion event, as
illustrated in (5.35-37) above and by the verb sequence in (5.43) below.

(5.43)   RUN ENTER-room LOCK
         'I ran into the room and locked the door.'

5.4.3.2.   MOVE + directional

An unusual specimen of the manner + directional sequence is the MOVE +
directional sequence.[44] Before discussing properties of sequences involving
MOVE, I will first discuss the form and meaning of MOVE. The sign MOVE is

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[44] Thanks go to Pamela Perniss for drawing my attention to MOVE.

performed by one or two elbows quickly closing on the side of the signer, as shown in Figure 5.12.

Fig. 5.12 MOVE: initial and final position

Identifying the meaning of MOVE posed a bit of a puzzle. Roughly, the sign was found in three kinds of contexts. Firstly, the sign was found with a single movement of the elbows and being the main or only sign expressing motion in an utterance. In this form and grammatical context, MOVE typically has a meaning associated with refusal, as illustrated in (5.51-53) below.

(5.51)   SLEEP [wakes up] [wakes up other person] SCHOOL MOVE:REFUSE
         TOWARDS
         'I woke up and said: 'come, let's refuse to go to school!'

(5.52)   FOREIGNER INDEX$_2$ HEAD HARD INDEX$_1$ FROM MOVE:REFUSE
         CLOTHES FROM REFUSE MONEY FROM REFUSE HEAD HARD

         'Foreigners, like you, are wicked when they refuse to give clothes or
         money.'

(5.53)   <surprise> MOVE:REFUSE SLEEP LIE-down
         'I was surprised and refused (to stay)/I got up. I went to bed.'

In (5.54), REFUSE is used as stop-command:

(5.54)   CRY REFUSE
         'Stop crying.'

The interpretation of refusal comes closest to the meaning of a formally similar gesture in hearing Akan culture that means 'I won't' or 'I refuse'.

Children use this gesture when refusing to carry out commands, for example to go and fetch water.

Secondly, MOVE is found with spatial and/or aspectual inflection. As noted in §5.4.1.2, a repeated and spatially oriented version of MOVE is used in all retellings of the Tweety and Sylvester cartoons to convey the busy movements of the characters in space to prepare attacks and counterattacks on each other. The AdaSL signers refer to the cat with the sign MAN. In (5.55), the cat walks up and down in front of a building, thinking of a way to catch the bird.

(5.55)   MAN INDEX MOVE-to-and-fro-on-lateral-axis
         'The man walked up and down.'

Signers of DGS render the same fragment with a legs-classifier, a V hand with wiggling fingers, representing the walking legs of the cat (Nyst & Perniss, 2004). Another example of a spatially modified form of MOVE is (5.56), where a single movement on the lateral axis is expressed.

(5.56)   MAN WOOD BIG-tracing-of-outline MOVE-reduplicated-left
         TOWARDS-left
         'The man took a big wooden box, went to the other side and put it down.'

Example (5.57) is part of a retelling of a bible story. Here, a repeated, non-directed version of MOVE refers to the high-speed motion of soldiers, who are trying to catch a group of fleeing persons.

(5.57)   SOLDIERS(GSL) SOLDIER POLICE MOVE CATCH MOVE-rep GO-road
         'The soldiers drove hard (in their horse wagons) trying to catch them.'

Whereas the meaning of MOVE as a non-reduplicated main verb is typically associated with 'refusal', the meaning shared by the modified usages of MOVE rather concerns motion, either walking or driving a horse wagon. To complicate the issue, reduplicated forms of MOVE are also found with a 'refusal' interpretation.
At this point, there are two possibilities. The first possibility is that there are two separate, homonym signs REFUSE and MOVE. The second possibility is that there is one sign that has both a motion component and a refusal component. Although the meanings of 'refusal' and 'move' seem hard to reconcile, there are two arguments that favour a unified account of REFUSE and MOVE. Firstly, although less than in other sign languages, the form of the signs, with primary elbow movement, is infrequent in AdaSL and resembles one conventional gesture in Akan culture. The Akan 'translation' for both signs does point in this direction. Consultants quite consistently

glossed MOVE as *guan*. This word is most accurately translated as 'to flee, escape', but is more commonly used as 'to run'.[45] The motion meanings of MOVE can relatively easily be related to 'fleeing', 'escaping' and 'running'. However, in a less straightforward way, the 'refuse' interpretations of MOVE can also be related to 'fleeing, escaping'. Thus, fleeing not only implies translative motion, but also removal of oneself from a request or command. The 'refuse' gesture as attested in the hearing Akan culture is primarily used by children refusing a request or a command. In practice, a child refuses such a command most effectively by moving away from the person giving the command or from the entire situation, i.e. by running away. The evasive motion of a shy or moody child, reluctant to be touched, moving the arm and body out of reach of others, seems to be the iconic base of the emblematic gesture. Consequently, 'removing oneself' or 'withdrawing oneself' may be the common semantic source of AdaSL MOVE and REFUSE. The fact that in (5.53) the sign allows both interpretations, is supportive evidence for a synchronic relation between the two usages of MOVE.

Whether or not REFUSE and MOVE are in fact one sign, what is relevant for the description of verb sequences consisting of MOVE + directional is that outside of such sequences, MOVE has a broad range of interpretations, including walking, driving a horse wagon and possibly refusal.

Now we will turn to the sequences of MOVE and a directional sign. When occurring in a verb sequence, the articulation of MOVE is often minimal and cliticises to the following directional sign. These were particularly frequent in the retellings of the Tweety and Sylvester, as a result of the large number of motion events in these cartoons (see §1.8.2). At first sight, the MOVE + directional sequence resembles other manner + directional sequences described in §5.4.3.1; MOVE is a whole body sign and the sequences express spontaneous motion. Although resembling manner + directional sequences, it is not clear which Manner element MOVE expresses in these sequences, as in non-sequential contexts, MOVE may express different types of manner of motion, including walking and driving a horse wagon, and possibly even refusing/withdrawing. Considering the manner expressed by MOVE in verb sequences, we find that it may be interpreted as fleeing, as in the example (5.44-46). Example (5.36) is an utterance taken from the retelling of the bible story of the Good Samaritan, who is robbed of his belongings after being assaulted. In this example, MOVE refers to the fleeing of the robbers.

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[45] I thank James Essegbey for clarifying the semantics of *guan*.

(5.58)   CLOTHES ALL CATCH MOVE FROM
          'They took all of his clothes and fled.'

The examples in (5.59) and (5.60) are both from the Tweety cartoon
retellings, and represent two events in which the cat flees or escapes. In
(5.60), the second instance of MOVE has partly merged with the preceding
sign ENTER.

(5.59)   CAT MOVE FROM
          'The cat fled.'

(5.60)   MOVE GO-ROUND ENTER^MOVE FROM-left
          'He quickly went away/escaped.'

However, MOVE cannot always be interpreted as 'flee/escape', as illustrated
by the examples (5.61-64). These examples are drawn from retellings of a
particular cartoon fragment known as 'The bowling ball'. In this fragment,
the cat enters a drainpipe to climb up to where the bird is. The bird sees this,
goes inside the house to fetch a big bowling ball and drops it in the
drainpipe. Colliding with the cat inside the drainpipe, the ball enters the cat's
belly. The cat with the ball in its belly comes out of the bottom of the pipe
and rolls away. The first motion event, the cat entering the drainpipe, is
expressed by MOVE, as illustrated in (5.61). In (5.62), the bird goes inside the
house, not to flee, but in order to fetch the bowling ball. In (5.63), the cat has
swallowed the bowling ball, as a result of which he goes down inside the
drainpipe. Here, the sign MOVE precedes the sign expressing the downward
motion of the cat. In (5.64) MOVE occurs twice, once fused with the sign
BIG-BELLY, followed by a non-fused form of MOVE, both preceding FROM-
right. This phrase expresses the cat rolling away with the ball in his belly. In
all cases of MOVE in (5.61-5.64), there is no question of fleeing. Note that
the spatially modified form of MOVE, fused with the sign BIG_BELLY, is a
complex unit simultaneously expressing manner and direction of motion, as
well as a size and shape feature of the moving entity.
The Manner of motion involved in the examples (5.61-64) varies greatly and
consists of climbing, flying, falling and rolling, respectively.

(5.61)   INDEX-laptop MOVE CLIMB-up
          'He climbed up (inside the drainpipe).'

(5.62)   SEE MOVE FLY-left
          '(The bird) saw (the cat) and flew (inside the house).'

(5.63)   ENTER-head MOVE GO-ROUND DIRECTIONAL-INDEX-down
         '(The ball) entered him through his head and so he went down
         (through the drainpipe).'

(5.64)   INDEX-belly BIG-BELLY [BIG-BELLY:MOVE-rep]-right MOVE-right
         FROM-right
         'His belly became big and he rolled away.'

So, neither within verb sequences, nor when occurring as the main verbal
sign in an utterance, a consistent Manner type appears to be expressed by
MOVE. Considering what the diverse motion events found to occur with
MOVE in and outside of verb sequences have in common, I find that the
feature shared by all of the motion event is that the motion expressed is
intransitive and concerns an animate entity.

MOVE: from a conventional gesture to a marker of Cause
From the preceding description of MOVE, it becomes apparent that MOVE
expresses an intransitive motion of an animate entity, without specifying
Manner of motion. No Manner being specified by MOVE, we must conclude
that the MOVE + directional sequence is quite different in nature from the
Manner + directional sequences, despite their formal resemblance. The
question that remains is the added value of MOVE in MOVE + directional
sequences. Translative motion is already coded in the directional. Yet, these
directionals are in most cases neutral with respect to Cause of motion, i.e.
they may indicate spontaneous motion or transitive/externally controlled
motion. When a manner sign precedes such a Cause-neutral directional, the
sequence 1) is specified for a particular Manner of motion, and 2)
automatically receives a spontaneous motion-interpretation. Like the manner
+ directional sequences, MOVE restricts the possible interpretations of the
Cause-neutral directional, and allows only an intransitive interpretation,
indicating spontaneous motion. Consider again (5.59): CAT MOVE FROM.
Without MOVE, this phrase is ambiguous; it can be interpreted as 'the cat
causes something to move' or 'the cat moves'. Adding MOVE leaves only
one possible interpretation, which is 'the cat moves'. Indeed, all the
sequences with MOVE involve spontaneous motion. In all examples, the
MOVE + directional sequences concern the intransitive, spontaneous motion
of a referent. Like the manner signs in the manner + directional sequences,
MOVE specifies the adjacent directional for Cause, marking spontaneous
motion. Whereas the manner signs by definition express the manner of
motion in such sequences, MOVE does not express a specific manner of
motion other than 'spontaneous motion'. Its primary function thus seems to
be marking Cause, i.e. marking a directional for spontaneous motion.

The sign MOVE is likely to have its origin in the conventional Akan gesture conveying 'refusal'. This gesture has been incorporated in AdaSL with two, related meanings; one being refusal, the other one being different types of spontaneous motion. In verb sequences with MOVE, the motion interpretations prevail. In these sequences, the contribution of MOVE appears to be grammatical more than lexical, marking the sequence for spontaneous or intransitive motion. This finding, in addition to the observation that MOVE cliticises to the adjacent directional signs suggests that MOVE has grammaticalized in the context of verb sequences. AdaSL MOVE illustrates how a conventional gesture can develop into a grammatical marker in a sign language.

5.4.3.3. Manipulation + directional

The second type of sequence expressing translative motion involves a sign denoting a type of manipulation followed by a directional. Signs expressing manipulation in such sequences are CARRY-BAG, CATCH, BUY, CARRY-ON-HEAD, STEAL and TAKE. In (5.65), an example of a sequence of a manipulation sign and a directional sign is given. The example is part of a large story in which a signer explains how he caught a rat and took it home. The event of carrying the bag home is expressed by the verb sequence CARRY-BAG TOWARDS, represented in bold in (5.65). Also found to express manipulation in such sequences are directional signs with a transitive reading. Thus, in (5.66), the manipulation is expressed by TOWARDS-head, which is followed by the directional element FROM.

(5.65)   SEE GROW ENTER **CARRY-BAG TOWARDS**
         'I thought I could let it grow fat, so I put it in a bag and took it
         home.'

(5.66)   **TOWARDS-HEAD FROM**
         'I put it on my head and go away.'

Whereas manner signs in the manner + directional sequences specify the motion as spontaneous, the manipulation sign preceding a directional specifies the motion as caused by an external agent. By far the most common manipulation sign in sequences with a directional is TAKE, which is performed with a Closed B or a Lax O handshape moving upwards. The handshape of TAKE does not change to reflect properties of the manipulated entity, although two handed instances of TAKE tend to express the manipulation of larger entities and one handed instances smaller entities. The sign is accompanied by the mouthing [fa], from Akan *fa*, meaning 'take', as

illustrated in Figure 5.13. An example of the use of TAKE is given in (5.67). In that example, the sign TAKE is interpreted as 'pick up'.

Fig. 5.13 TAKE

(5.67)   ENTER PUT-down WOBBLE GO-IN-LINE INDEX-picture SEE-durative
         <relief> INDEX **TAKE** INDEX
         'She put (the baby) inside (the basket), put (the basket) down on the
         wobbly (water) and off it went. This one followed (the basket) by
         sight and saw to her relief that it was picked up there.'

In the examples (5.68-71), the sequences of TAKE and a directional can be interpreted as expressing the actual manipulation of an entity. Thus, the example in (5.68), taken from the bible story telling about how God took out a rib from the side of Adam to create a companion for him. In this example, TAKE refers to the handling of the rib.

 (5.68)   INDEX MAN SLEEP TOOTH(?)[46] **TAKE-**chest **ABRUPT** CHANGE(GSL)
         WOMAN ONE TWO TOWARDS-down TOGETHER
         'When he was asleep, a rib was taken out and changed into a
         woman. One (had become) two and they stayed together.'

In (5.69) and (5.70), TAKE refers to the handling of a ball and a corps, respectively.

(5.69)   BIRD MOVE-reduplicated BALL **TAKE ABRUPT**
         'The bird went to fetch a ball and threw it down.'

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[46] The gloss TOOTH refers to a sign consisting of a pointing at the teeth. As indicated by the question mark, I am not entirely sure of the interpretation in this context, but I think it refers to the rib of Adam.

(5.70)   POLICE INDEX-road-to-Accra CAR **TAKE ABRUPT** COLD HOSPITAL
         ENTER
         'Police from Accra came by car and brought (the corpse) to the
         mortuary.'

In (5.71), TAKE may refer to the actual handling of an ill body, but it may
also refer to a more metaphoric handling, i.e. initiating and accompanying
the visit of the ill person to the hospital.

(5.71)   **TAKE FROM** HOSPITAL(GSL) WAIT
         'I took you to the hospital to stay there.'

In contrast to the above examples, the events represented by the TAKE +
directional sequence in the examples (5.72-74) do not primarily involve the
actual taking hold of the moving entity.

(5.72)   MAN SEARCH FINE MARRY **TAKE FROM-**right-up CHILD-rep
         TOWARDS-left
         'A man, looking for a nice (woman), marries her and takes her away,
         while her children stay.'

(5.73)   TOMORROW FROM-Mampong CHILD-reduplicated **TAKE TOWARD**
         'Tomorrow I will go and fetch the children from Mampong-
         Akwapim.'

(5.74)   SCHOOL SMALL FINISH INDEX$_1$ **TAKE ABRUPT-**Accra
         'She will finish her school soon and then I will send her to Accra.'

In these examples, the TAKE sign no longer expresses a specific type of
manipulation. Rather it indicates an abstract type of manipulation and
specifies the Cause-neutral directional for 'caused by external agent'. As
such, TAKE can be seen as the counterpart of MOVE, whereby the latter marks
the motion for 'spontaneous' and the former marks it for 'caused by an
external agent'. In sign languages which make use of classifier predicates,
the type of classifier used specifies the motion for Cause. Handling
handshapes imply the handling of an entity, and hence an external agent
while the lack of explicit reference to handling makes entity handshapes
appropriate for the expression of spontaneous motion. The above discussion
has made clear that AdaSL expresses motion with directionals, rather than
with classifier predicates. AdaSL directionals, however, are neutral with
respect to Cause. Consequently, AdaSL has to resort to a different strategy to
specify the Cause of motion. As we have seen, AdaSL specifies Cause with a

separate verb in a serial verb construction rather than by a simultaneous classifier construction.

5.4.3.4. AdaSL verb sequences as serial verb constructions

Having described a manner and a manipulation sequence of signs in AdaSL verb constructions expressing motion, the question arises whether these constructions can be analysed as serial verb constructions. The basic definition of serial verb construction is 'two or more verbs in a clause, expressing one conceptual event'. As formal criteria for identifying a verb in AdaSL have not yet been established, we will here use provisional criteria based on the semantics of a sign. Thus, signs that on their own may denote an action are equalled to verb signs in this case. As such, the sequences have two verbs. The sequences under consideration are not separated by the types of boundary markers identified in §1.8.3.1, i.e. 'restore eye contact' or a manual FINISH sign. As such, there seems to be no clause boundary separating the two verbs. A striking feature of many sequences is a switch of dominance of the hands, which has not been found to mark boundaries in other contexts. In many cases, the manner or manipulation sign is made with one hand, and the directional with the other. This allows the directional sign to smoothly follow the preceding sign, thus creating a prosodic unit. With respect to the second part of the definition –the 'one-event' criterion-, the manner/manipulator + directional sequences in AdaSL may be taken to express one event, as they are interpreted as occurring within the same temporal frame in most cases.

Additional tendencies identified in serial verb constructions in spoken languages concern argument sharing and the marking of tense-aspect-mood, negation, and sub- or coordination (see among others Ameka, 2005). Unfortunately, most of these tendencies cannot be evaluated for AdaSL and other sign languages, because of the lack of marking of the relevant features on the verb. Thus, constraints concerning tense and mood marking on the verbs are not informative, as tense and mood are expressed by separate signs in AdaSL, as in many sign languages. AdaSL verbs may be inflected for aspect, but the status of aspect marking as a defining criterion is debatable. The constraint on one overt subject for the whole construction is obeyed in the AdaSL sequences, but it may not be a useful criterion to distinguish a serial verb construction from a sequence of conjoined phrases in the spontaneous data. In conjoined phrases with the same subject, the subject is generally elided in the second conjunct.

In addition, however, some of the constraints proposed in the literature can be applied to the AdaSL sequences. These are the following.

- *Strict ordering of the verbs*. Verbs of one type have a fixed position in the serial verb construction as opposed to verbs of another type.

> For example, in serial verb constructions expressing a motion event and involving a directional verb, this directional verb typically occupies the final position in the verb sequence (Sebba, 1994).

- *No marking of syntactic dependency.* All of the verbs of the sequence are formally similar to main verbs, without being marked for dependency (Foley & Olson, 1985).
- *The individual verbs can function as independent verbs in simple clauses (in the same form (Sebba, 1994).*
- *The verbs form a prosodic unit (Sebba, 1994).*
- *One negation negates the combined meaning of the verbs (Sebba, 1994).*

Considering the validity of these defining criteria for the manner & manipulation sequences in AdaSL, the following is observed.

- A strict ordering of the verbs is attested, as the manner or manipulator sign always precedes the directional sign in the AdaSL sequences. As such, AdaSL complies with the cross-linguistic tendency to have the directional verb in the final position of the verb sequence, as described by Sebba (1994).
- As for the marking of syntactic dependency, in the AdaSL sequences no manual or non-manual elements were found to mark a sub- or coordinating relation between the verbs.
- As for the criterion that the individual verbs can function as independent verbs in simple clauses (in the same form), I find that most verbs in the AdaSL sequences can function independently. Arguably, MOVE is an exception, since it has a different meaning ('refuse') when functioning independently. Formally, the sign in a sequence may be reduced.
- The AdaSL verbs sequences form a prosodic unit, in the sense that they show a consistent prosodic pattern of eye gaze and handedness and there is usually a fluid transition from one sign in the sequence to another.
- To test the criterion of one negation negating the combined meaning of the verbs, the elicitation of specific data is required, as no negated sequences were found in the spontaneous data.

Despite the fact that most of the criteria proposed in the literature could not be applied to AdaSL, the available evidence suggests that the analysis of the verb sequences in AdaSL as serial verb constructions is correct.

The discussion of AdaSL verb sequences of course raises the question why the Manner and the Path/Direction of motion are realized on two separate elements. The split might be motivated cognitively, reflecting the cross-linguistic tendency to split up these two motion elements (Talmy, 1991; Slobin, 2004). Alternatively, it might be due to an articulatory constraint

against the spatial inflection of whole body signs (Slobin & Hoiting, 1994; Hoiting & Slobin 2003, Supalla, 1990). The use of classifier predicates, which may conflate Figure, Manner, and Path in a single form in ASL, NGT and other sign languages weakens an explanation of the split in terms of a cognitive restriction, as it shows that human cognition is able to linguistically combine these aspects of motion. An articulatory explanation cannot account for the AdaSL data either, as at least some whole body signs can be modified spatially for Direction (see §5.4.1.2).

To summarize, two types of verb sequences expressing motion are found in AdaSL, 1) a sequence of a manner sign and a directional, and 2) a sequence of a manipulation sign and a directional. Adding a manner or a manipulation sign to a sequence not only adds information on the manner or manipulation of motion, but also on Cause of motion. One specimen of the manner + directional sequence has a separate status. In sequences with a directional sign, the sign MOVE adds no manner component, but has grammaticalized into a marker of Cause of motion, specifying a spontaneous motion interpretation for the Cause-neutral directional. In the manipulation + directional sequences an unusual specimen is found as well. The sign TAKE adds no Manner component and has grammaticalised into a marker of Cause of motion as well. When TAKE precedes a directional, the sequence is interpreted as denoting externally caused motion. Whereas segmentation of Manner and Path/Direction is attested in several other sign languages, no accounts of the segmentation of manipulation and Path/Direction have yet been given for other sign languages. Similarly, the marking of ±Cause by separate signs has not been found in descriptions of other sign languages either. Considering the cross-linguistic criteria proposed for serial verb constructions and tested for AdaSL, I find that the manner/manipulation + directional series comply with these criteria.

5.4.4. Verb sequences in AdaSL: a contact-induced phenomenon?

Manipulation + directional sequence has not been described for other sign languages. Interestingly, in the spoken language surrounding AdaSL, Akan, we do find verb sequences of the same type, as noted in §5.3. The presence of the manipulation + directional sequence in AdaSL is thus possibly a contact induced feature in this sign language. Next to the 'take go'-type, Akan also has the manner + directional series, again paralleling the AdaSL pattern. The use of manner + directional series may in part be motivated by the presence of a manner + directional series in spoken Akan as well, reenforcing the tendency attested across sign languages to develop these series.

In Akan, intransitive motion verbs like kɔ 'go' and ba 'come' get a causative reading when preceded by the defective verb de 'take' or by its suppletive effective form fa (§5.3). To illustrate this, compare examples (5.6) and (5.7), repeated below as (5.75) and (5.76) respectively. In (5.75), ba conveys the coming of the subject, who is Kofi. The motion expressed by ba is spontaneous motion. In (5.76), ba conveys the coming of the object, which is the book. The motion in this example is caused by the subject, who again is Kofi. The interpretation of ba as conveying externally caused motion is brought about by adding de, 'take'.

(5.75) Kofi a-ba
        Kofi PAST-come
        'Kofi has come'

(5.76) Kofi bɛ-fa   nwoma no   a-ba   ntɛm
        Kofi FUT-take   book   the   CON-come   quickly
        'Kofi will bring the book quickly'

In serial verb constructions with a manner sign and an intransitive motion verb like *kɔ* or *ba,* the interpretation of the motion verb remains intransitive, just like in the AdaSL sequences.

(5.77) Akwadaa no   wéa   kɔ   dan   no   mu
        Child   DEF   crawl:HAB   go-HAB   room   DEF
        containing-region (Ameka & Essegbey,2006:363)
        'The child crawls into the room'

Thus, the expression of Cause with translative motion is strikingly similar in Akan and in AdaSL. It is very likely that the expression of caused motion in AdaSL is a contact-induced feature, since it replicates the causative structures in Akan.

Note that the influence of spoken languages on sign languages is frequently reported in the form of mouthings, fingerspelling, and – to a lesser extent – loan translations. Accounts of structural influence of spoken on signed languages, however, are sparse and mainly deal with contact signing (Woodward & Markowicz, 1980; Lucas & Valli, 2000) and secondary sign languages of hearing communities, such as the Australian Aboriginal sign languages studied by Kendon (1988). Contact-induced changes of the syntactic structure of a language indicate intense contact between the relevant languages (Thomason & Kaufman, 1988). Remember that hearing signers may use AdaSL or a code-blend of AdaSL and Akan in their communication with the Deaf. The code-blend consists of spoken Akan, whereby the content words are accompanied by AdaSL signs with an identical or similar meaning (see §1.4). The code-blend uses the structure of

spoken Akan. As such, the use of a visualized form of Akan as the Akan-AdaSL code-blend makes the linguistic structure of Akan accessible to deaf signers. In order to further investigate the scenario of the contact-induced emergence of the manipulation sequences, I investigated their occurrence in code-blends of Akan and AdaSL.

The code-blend renderings of the Tweety cartoons were examined to see which signs accompany the spoken Akan serial verb constructions of the type manipulation + direction. As in the spontaneous AdaSL data, manipulation + direction sequences mostly involved 'take' as the element expressing manipulation, i.e. *de* or *fa*. Interestingly, none of the phrases with *de* were accompanied by the sign TAKE. Typically, the verb *de* was left unaccompanied and only the other verb of the sequence was represented in sign, as in (5.62). *Fa* was accompanied by TAKE only once, as in (5.63).

(5.62)   HEAD ENTER
         ɔ‑de   ne   ti   hyɛ‑ɛ   tokuru   no   mu
         3SG-take 3SG.poss head   put-PAST   pipe   DET   inside
         'He put his head inside'

(5.63)   TAKE BALL-SHAPE TOWARDS-up ABRUPT-down
         ɔ-kɔ-fa   ade   kurukuruwa   **de**   **atow**   mu
         3SG-andative-take   thing   round:large   take   throw   in
         'He goes to take a round thing and throws it inside'[47]

The absence of TAKE signs accompanying *de* is not entirely surprising, as typically content signs are selected to accompany the spoken utterance. However, this pattern shows that the Akan-based contact variety of AdaSL has clearly not provided the basis for the emergence of the manipulation + directional sequence in AdaSL. Two alternative explanations for the origin of these sequences are possible. First, the co-speech gesture of hearing people possibly reflects the manipulation + direction series in spoken Akan (cf. Ozyürek, Kita, Allen, Furman & Brown, 2005). However, the ratio of manual units per speech units is typically higher in code-blends of a spoken and a sign language than in co-speech gesture. Thus, it is not very likely that in Akan co-speech gesture a manual element regularly accompanies *de* in verb sequences, whereas the code-blend of Akan and AdaSL does not. Secondly, the Akan structure may have been imposed on AdaSL more directly as a result of interference in the AdaSL (without speech) of those signers whose primary language is Akan. The issue of interference in hearing signers is elaborated upon in Chapter 6. That is, hearing signers may carry over structures of Akan into their signing. Whichever language form

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[47] I thank Mercy Lamptey for her help with the transcription of these examples.

constituted the basis for the AdaSL construction, the presence of a manipulation + directional sequence in AdaSL is very likely a reflection of the identical Akan structure expressing a causative. This contact-induced feature at the structural level indicates a situation of intensive language contact.

5.4.5. Spatial mapping and perspective

In the previous sections, I described and discussed signs and sequences of signs found to express motion in the AdaSL data. The types of signs expressing motion in AdaSL and their abilities for modification correlate significantly with the use of space in AdaSL. The language appears to differ considerably in its use of space from the sign languages described in this respect. Strikingly, AdaSL makes extensive use of real-size spatial projections, but no evidence is found of token space projections (see §5.2.1 for these terms). The following observations substantiate this claim.

Oversimplifying, two main types of spatial mappings can be distinguished in many sign languages (as well as co-speech gesture). Character perspective or real-space and surrogate space projection (Liddell, 2003) includes the signer in the projection and is generally a real-size projection. Observer perspective or token space (Liddell, 2003) excludes the signer from the projection and typically involves a major reduction in the proportions of the projected entities. Indicators of real-size spatial projections as real and surrogate space are whole-body signs. Indicators of token space, is the use of spatial projection on a limited, horizontal plane at chest height in front of the signer (see §5.2.1).
AdaSL makes extensive use of whole body signs, which may even be spatially modified in AdaSL, as described in §5.4.1.2. AdaSL frequently uses absolute pointing to persons and locations, including locations behind the body and non-visible locations. The fact that directionals are generally articulated with large movements indicates that these signs also use real-size spatial projection. In the spontaneous data, directional signs are typically oriented towards real space loci, and sometimes towards surrogate space loci.

No structures signalling a token space projection were attested in the data. None of the signers appear to make use of the limited, horizontal plane in front of them. In other sign languages, this plane may be used for entity classifier constructions and referential loci (Engberg-Pedersen, 1993). As shown in §5.4.1.2, AdaSL does not use a system of entity classifiers to express motion in space. Although this was not systematically investigated, no examples are found of the establishment of loci on a limited plane in front of the signer. Other forms of projection with reduced proportions, like the

count buoys described for ASL (Liddell, 2003), are not attested in the AdaSL data either.
In short, spatial projections in AdaSL appear to be restricted to real-size proportions, allowing both real space and surrogate space projections.

5.5.   Summary & Discussion

This chapter describes expressions of (translative) motion in AdaSL. Most sign languages of large Deaf communities studied so far use classifier predicates, densely packaged with motion elements like Manner, Figure, Path and Cause. AdaSL crucially differs from these sign languages in that it uses virtually no entity classifiers in space to express motion. Instead, AdaSL uses sequences of semantically light units, including generic directionals to express motion. With little simultaneous packaging in motion signs, AdaSL patterns more with young sign languages, such as home sign and the young Nicaraguan Sign Language. This is surprising finding, considering the old age of AdaSL.

Directionals differ from classifier predicates in that they have fixed handshapes and denote basic directional motion patterns. They are not specified for Cause. Directionals commonly appear in two types of serial verb constructions. The manner + directional sequences resemble similar sequences in ASL and NGT. The manipulation + directional sequences have not been attested in other sign languages so far. In addition to specifying the directional sign for manner of motion, the manner and manipulation signs also specify the directional for spontaneous and caused motion (i.e. [± Cause]), respectively.

Two signs, MOVE and TAKE, have grammaticalized into markers of Cause in verb sequences. The sign MOVE, resembling a manner sign when occurring as the only verb, appears to add little to no information on the manner of motion when preceding a directional. Its main function is to mark the construction for spontaneous motion. In the same vein, the sign TAKE appears to express not only actual action of taking hold of an entity, but also metaphorical manipulation. It is therefore analysed as a marker of caused motion. Thus, instead of specifying Cause of motion simultaneously by selecting a handle or an entity handshape, AdaSL commonly marks Cause separately, in a sequence of verbs. As such, AdaSL differs from both sign languages of large Deaf communities as well as from home sign.
Another cross-linguistically unusual structure used to express motion in AdaSL is found in the use of spatially modified whole body signs, simultaneously expressing manner and path/direction of motion.

In the beginning of this section, I concluded that as far as simultaneous packaging in expressions of motion is concerned, AdaSL

patterns with young sign languages. However, the use of grammaticalized constructions neither attested in young sign languages nor in old sign languages indicate that the expression of motion in AdaSL can by no means be interpreted as being stuck in an early phase of development. The data show that conventional, primary sign languages do have alternatives besides classifier constructions for the expression of motion. In their comparison of classifier constructions in ASL and Israeli Sign Language, Aronoff et al. (2003:68) state that:

> "These structures [classifier constructions, VN], which involve complex simultaneous morphology and are related to the encoding of the motion and location of objects in space, are found in ASL and ISL, and apparently in all sign languages, as the model predicts."

The idea that a conventional system of entity classifier predicates is a universal feature for sign languages is rapidly spreading as a result of the increasing number of studies reporting this types of classifier predicates in unrelated languages. However, the AdaSL data provide counterevidence, showing that a conventional system of entity classifier predicates is not a modality-driven universal feature of full-fledged sign languages.
In order to arrive at a unified account of the different structures expressing motion, it is necessary to consider the characteristics of spatial projections in AdaSL. The types of signs used in AdaSL to express motion, as well as their characteristics, are to a considerable extent motivated by a restriction to real-size spatial projections in this language. Thus, a restriction to real-size projections accounts for the virtual absence of entity classifier-like predicates in AdaSL and leaves open, or even favours, the use of handle classifier-like predicates, directionals, and the extensive exploitation of whole body signs, including their spatial modification. Morford hypothesises that the development of a classifier system for the expression of motion depends on the presence "of other characteristics" such as "a complex system of deixis and anaphora" (see §5.2.2). This hypothesis is only partly confirmed by the AdaSL data. The absence of a conventional system of (entity) classifiers in AdaSL primarily correlates with a restriction to real-size spatial projection. Hence, no features associated with token space projection are found, as this projection is a non-real size spatial projection. In the case of AdaSL, the development of a conventional system of entity classifiers does not depend on the presence of a complex system of deixis and anaphora. Rather, these three features –i.e. a system of classifier predication, deixis and anaphora-, depend on the use of the appropriate type of spatial projection, which is a token space projection.

        The cross-(sign)-linguistically unusual marking of Cause in AdaSL cannot be explained by reference to spatial projection. Strikingly, the

surrounding spoken language Akan also uses a series of 'take' + Direction to mark a causative reading of the otherwise intransitive directional element. This parallel suggests that the presence of separate marking of Cause in a verb sequence is the result of intensive contact between AdaSL and the surrounding spoken language Akan.

The AdaSL data convincingly show that the development of a conventional system of entity classifier predication is not an inevitable phenomenon, forced upon sign languages by their modality.

6. DISCUSSION

6.1. Introduction

The main aim of this thesis was to describe the sign language of Adamorobe. The secondary aim of this thesis, was to answer the question to what extent AdaSL differs from sign languages used by a large group of deaf users and to see whether sociolinguistic features can be considered to have caused these differences. Research on sign languages in the past decades suggests that there are significant structural similarities between sign languages. According to Johnston (1989), these similarities correlate amongst others with similarities in the social setting of these sign languages. The structural similarities across large sign languages are often claimed to also be related to the language modality, which suggests a unidirectional developmental path for sign languages. AdaSL is an African sign language, developed and used in a social setting atypical for sign languages used by a large group of deaf users. The central question addressed in this thesis is how AdaSL compares to the sign languages used by a large group of deaf users, as well as to other types of sign languages, such as home sign languages. This is discussed at length in §6.3. AdaSL is found to differ from the sign languages used by a large group of deaf users studied so far in five respects. In §6.4, I consider to what extent these five phenomena are a function of the social setting and what this implies for our general understanding of sign language structure. Can AdaSL be interpreted as lying somewhere on a unidirectional developmental cline between home sign and the sign languages used by a large group of deaf users as a result of the compelling influence of the manual-visual modality? In the last section, §6.5, I conclude this thesis and provide suggestions for further research.

6.2. Comparison of AdaSL with other types of sign languages

From the findings in the descriptive chapters of this study, a coherent picture emerges on which AdaSL appears to differ from sign languages used by a large group of deaf users in five respects. These differences are found 1) at the sub-lexical level, 2) in iconicity, 3) in spatial projection, 4) in the low degree of simultaneity, and 5) in the influence of the spoken language. In the present section, I discuss these aspects in sub-sections, providing a resume of the data that substantiate them.

6.2.1. Sub-lexical level

Generally, sign languages with no stable group of deaf users are claimed to differ from sign languages with a stable group of deaf users in several respects, including the use of a larger signing space, a smaller set of handshapes, and more multi-channelledness. In Chapter 2, §2.3, AdaSL signs were found to be articulated by the hand(s), the head, the face, the arm(s), and the leg(s) in a database of 365 single signs. In some signs, the articulator includes the hand, but extends to part of the arm. Mouthings derived from spoken Akan are found in 15% of the signs in the database. Mouth gestures do occur, but were not quantified. In general, the degree of multi-channelledness in the AdaSL lexicon seems to be considerable. In the single signs, 29 phonetic handshapes were found on the dominant hand, as described in §2.4. Of these, 14 were found to occur on the non-dominant hand as well. Based on the phonetic handshapes found, a set of phonemic handshapes was proposed in §2.5. Following Van der Kooij (2002) distinctivity, variation and iconicity of the handshapes were considered. Seven distinctive handshapes, /1/, /A/, /V/, /B/, /S/, /O/, and /ø/, are found to occur without an iconic motivation (in addition to occurrences with an iconic motivation). These are all relatively unmarked handshapes. Moreover, six distinctive handshapes exclusively occurring with an iconic motivation were identified. These are {closed 1}, {bO}, {closed bB"}, {closed V}, {5}, and {ø+aperture}. In both categories, a highly underspecified handshape is proposed; /ø/ and {ø+aperture}. The phonetic realisation of these underspecified handshapes is mainly or entirely determined by phonetic implementation rules. An impressionistic judgement of the size of the signing space is that it is relatively large compared to NGT. Moreover, AdaSL uses location types that are outside of the canonical signing space in NGT. Thus, some AdaSL signs are made on the crotch, the leg, the feet, and the back (§2.4.5). Considering the frequency of handshapes and their distribution, AdaSL appears to pattern like NGT, a sign language with a large group of deaf users. It is likely that similar patterns will be found in sign languages with no group of deaf users, but no data are available at present. However, when it comes to the degree of multi-channelledness, the size and markedness of the handshape inventory, and the size of the signing space, AdaSL appears to pattern with sign languages with no group of deaf users.

6.2.2. Iconicity

Sign languages with no stable group of deaf users are repeatedly claimed to be 'more iconic' than sign languages with a large, stable group of deaf users, although this claim is usually not substantiated by data. Since we lack

comparable data for sign languages used by a large group of deaf users, the degree of iconicity of the AdaSL lexicon cannot be strictly compared to sign languages used by a large group of deaf users. Nevertheless the type of iconic motivation in handshapes and, more generally, in signs in AdaSL do show up as a difference when compared to sign languages used by a large group of deaf users (and possibly sign languages with no group of deaf users as well).

In AdaSL, entity depiction is the most frequent type of depiction and is used in contexts where NGT, for example, would use tracing depiction, as attested in §2.6.1. A preference for entity depiction was also found in two types of signs expressing size and shape, i.e. in tracing signs and in measure stick signs (§4.3.1). In tracing signs, the fingers do not contribute to the expression of size and shape. This is in clear contrast with what has been claimed for ASL and NGT. Tracing signs were found to be infrequent in AdaSL. In measure stick signs, which are more commonly used in AdaSL, (part of) the hand or arm is substituted for the size or shape to be expressed. Hence, this type of sign uses entity depiction. AdaSL differs from other sign languages in particular when it comes to the representation of containers and bound surfaces. Smaller containers are represented by SASS handshapes through entity depiction, either using located entity SASS handshapes (§2.6.3), tracing entity SASS handshapes or entity SASS handshapes isolated in measure stick signs (§4.3.4). Only when the containers go beyond the size and shape of (part of) the hand/arm, outline depiction is used (§4.3.4).

The attested "preference" for entity depiction in AdaSL has interesting implications. Arbitrary choices in the use of iconicity in sign languages are known to occur at two levels (Taub, 2001). Firstly, a choice is made at the level of image selection, i.e. which visual image is selected to represent a concept. Secondly, a choice is made at the level of base selection, i.e. which aspect of the visual image is selected to iconically represent the image. The AdaSL data show that a choice can be made at a third level, i.e. in the selection of the type of iconicity to represent a particular visual base. The type of iconicity is not automatically selected by features of the base. Rather, sign languages appear to have some extent of freedom in selecting an appropriate type of iconicity. The "preference" for entity depiction over tracing in AdaSL is reflected in the set of handshapes found in the language. Thus, curved handshapes with thumb opposition, such as the F, C and bC hands, are infrequent or absent. In other words, the language-specific patterns of iconic motivation in AdaSL have a pervasive influence on the phonological building blocks of the language. This shows that, in order to be descriptively adequate, phonological models of sign languages have to account for the interplay of iconicity and phonology.

6.2.3. Spatial projection

A feature significantly affecting the structure of AdaSL is the relatively restricted use of space which is most strikingly seen in the expression of motion, as described in Chapter 5. Unlike the sign languages used by a large group of deaf users studied so far, AdaSL uses no conventional system of entity classifiers in space to express motion (Chapter 5). On body locations, entity handshapes reflecting properties of a moving entity are found only incidentally. Motion in AdaSL is commonly expressed by what are called here "directionals" rather than by classifier predicates. These signs differ from classifier predicates in having fixed handshapes, denoting basic directional motor patterns, and not being specified for Cause of motion. Directionals commonly occur in two types of serial verb constructions: manner + directional sequences and manipulation + directional sequences. Sequences of a manner sign and a motion sign are also found in sign languages used by a large group of deaf users. In contrast, sequences of a manipulation sign and a motion sign have not yet been reported for other sign languages. In addition to specifying the directional sign for manner of motion, the manner and manipulation signs also specify the directional for spontaneous and caused motion, respectively. The sign MOVE, originally interpreted as a manner sign preceding a directional, appears to add little to no information about the manner of motion. Its main function is to mark the construction for spontaneous motion. In the same vein, the sign TAKE appears to express not only actual taking hold of an entity, but also metaphorical manipulation. I have therefore suggested to analyze it as a marker of caused motion. Another interesting structure expressing motion in AdaSL is in the form of spatially modified whole body signs, simultaneously expressing manner and direction of motion.

In sum, four characteristics are noteworthy in the expression of motion in AdaSL: 1) the presence of spatially modified whole body signs, 2) the absence of a conventional system of entity classifiers in space, 3) the incidental use of entity classifier-like handshapes on body locations expressing motion on the body and 4) the existence of verb sequences with a separate marker for Cause of motion. Taken together, these characteristics point at a significant regulatory role of spatial projection on the expression of motion in AdaSL. Many sign languages used by a large group of deaf users are described as having at least two major spatial perspectives or projection types: a real-size character perspective, including reference projections on the signer, and a reduced-size observer perspective, using a limited plane in front of the signer. This study has shown that none of the different types of expressions of motion in AdaSL make use of a reduced-size projection. Rather, all expressions of motion neatly adhere to real-size projections. In addition, those AdaSL motion constructions that have not yet

been reported for other sign languages all seem to be alternative ways of expressing concepts that are generally expressed by means of reduced size and observer perspective in sign languages used by a large group of deaf users.

It is not immediately obvious what motivates the restriction in AdaSL to real-size spatial projections. Possibly, the preference for real-size spatial projection is an (areal) feature of non-verbal communication. As mentioned before, sign languages used by a large group of deaf users, home sign languages and co-speech gesture typically make use of two types of spatial projections, i.e. one real-size projection, a.k.a. character perspective, and one reduced size projection, a.k.a. observer perspective. Yet, a small-scale study on the co-speech gestures in a narrative of another Ghanaian Kwa language, Ewe, showed no evidence of a reduced-size spatial projection (Nyst, 1997). This similarity in the type of spatial projection used in Ghanaian co-speech gesture and AdaSL raises the question whether the same restriction is found in Akan co-speech gesture as well. This is an interesting aspect for further research.

6.2.4. Limited usage of simultaneity and productive iconicity

Various types of data presented in the previous chapters indicate that AdaSL exploits the possibilities for simultaneous representation less than sign languages used by a large group of deaf users, notably in the expression of size and shape and in the expression of motion. The same tendency is found in the restricted use of simultaneous constructions, as will be discussed below.

In the explicit presentation of size and shape, as described in Chapter 4, two types of AdaSL size and shape signs were found that do not exploit the possibilities for simultaneous expression provided by the modality as much as sign languages used by a large group of deaf users do. In sign languages used by a large group of deaf users, size and shape specifiers may be iconic in several parameters, i.e. the handshape, the location, the orientation and the movement. In AdaSL, signs expressing size and shape may be iconic in only some of these parameters, depending on the type of size and shape sign. Thus, AdaSL tracing signs express their size and shape meaning only by movement, but not by handshape as is common in large sign languages. In addition, the orientation of the hands in tracing signs rarely contributes to the size and shape meaning in a simultaneous fashion. In addition, measure stick signs express their size and shape meaning only by handshape, but not by movement or orientation. In short, no productive size and shape sign is found in AdaSL that is iconic in all its parameters. In the expression of motion, as discussed in Chapter 5 as well as in the preceding section, §6.3.3, AdaSL is found to make only restricted use of

classifier predicates. Handle classifier predicates expressing motion are infrequent and motivated entity handshapes expressing motion in space are virtually absent. In sign languages used by a large group of deaf users, classifier predicates are well known for their potential to simultaneously combine semantic elements. The absence of a conventional system of entity classifiers can be explained in terms of a restriction to real-size spatial projections, in terms of a general avoidance of heavy simultaneous packaging, or a conspiracy of the two features. Instead of classifier predicates, AdaSL mainly uses directionals to express motion in space. These directionals either have non-iconic handshapes or fixed handshapes that, though iconic, do not reflect properties of the moving entity simultaneously. The directionals are neutral with regard to agentivity, which may, however, be specified sequentially by a separate sign. Conveying information only on the path or direction of the motion, the directionals are semantically light units, with little if any simultaneous packaging of information. Extra information can only be conveyed by sequentially adding a separate sign. As such, AdaSL resembles an adult home signer (Morford, 2002) and the recently emerged Nicaraguan Sign Language (Kegl et al., 1999). Yet, in AdaSL the serial constructions have stabilized and conventionalized to the extent that two markers have undergone semantic bleaching and have grammaticalized into a complementary set of transitivity markers.

Another respect in which sign languages used by a large group of deaf users have been described as exposing a considerable degree of simultaneous packaging is found in the form of numeral incorporation. In Chapter 2, it was reported that no convincing examples of numeral incorporation had been found in the AdaSL data.

The capacity for simultaneous packaging of information in sign languages is perhaps most impressively demonstrated by the use of simultaneous constructions, i.e. constructions in which the two hands independently but simultaneously express two distinct propositions (Miller, 1994; Vermeerbergen, Leeson & Crasborn, 2006). Such constructions often involve what Liddell (2003) calls 'buoys'. A well-know type of buoy is the list buoy, which lists referents by extending one by one the fingers of the non-dominant hand. The referents are thus projected on the individual fingers and can be referred to by reference to the relevant finger. Addressing the issue of simultaneous constructions, I find that these are highly infrequent in AdaSL (Nyst, 2006). Obviously, simultaneous constructions involving entity classifier predicates were not found. Moreover, common types of buoys, such as the list buoy, were not found either, as already claimed by Frishberg (1975).

Taken together, the features listed above suggest that AdaSL exploits the iconic possibilities of the visual-gestural modality to a lesser degree than large sign languages do. The (usually iconically motivated) possibility of simultaneously expressing several semantic elements in a single signed unit appears to be exploited to a lesser extent in AdaSL than in the sign languages used by a large group of deaf signers.[48]

6.2.5. Influence of the surrounding speech community

The influence of a surrounding, spoken language has been attested in a large number of sign languages used by a large group of deaf users. This influence is reflected most prominently in the use of mouthings, fingerspelled elements, and loan translations. Moreover, non-verbal or gestural elements accompanying the spoken languages may be integrated in sign languages. For sign languages with no group of deaf users, the influence of the surrounding spoken language is reported mainly in the form of mouthings and the integration of emblems or quotable gestures.

In the literature on language contact, a distinction is made between the agents that bring about a contact-induced form. These agents may either be the dominant (L1) or non-dominant (L2)[49] users of a language (Van Coetsem, 1988; Thomason & Kaufman, 1988). When language users change their dominant language as a result of multilingualism, this is referred to as recipient language agentivity or borrowing. An example of a borrowing from English is the Akan word *kaa* for 'car'. When language users modify their non-dominant language, this is referred to as source language agentivity or imposition, as for example in the case where a large group of immigrants with the same dominant language influences the language of the community they integrate in. An example is the distinct accent of Moroccan immigrants in the Netherlands. Another example of imposition is the structure 'this my car' to mean 'my car' in the English of L1 users of Akan, reflecting the Akan structure POSS NOUN DET. Specific social and linguistic features are associated with each type of agentivity (Van Coetsem, 2000). The social motivation for borrowing generally is a higher prestige of the non-dominant or source language, whereas imposition is motivated by a more practical communicative need. Whereas borrowing concerns frequent, salient forms, firstly affecting unstable domains of the dominant language, imposition

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[48] On the other hand, at least two types of structures are found where AdaSL seems to exploit possibilities for simultaneity more extensively than large sign languages. First, AdaSL has conventionalized a considerable number of autonomous (morphological) mouthings; secondly, AdaSL allows for the combination of whole body manner signs with a path movement.

[49] In this chapter, the terms L1 and L2 refer to primacy or dominance in use, not in acquisition.

concerns less salient forms and affects the stable domains of a language first, i.e. phonology and syntax. Whereas borrowing is random and sporadic, imposition tends to be systematic.

In AdaSL, the influence of Akan is apparent in the form of mouthings, loan translations, and the separate marking of Cause of motion. Moreover, the influence of the wide culture is evident in the integration of non-verbal elements such as emblems or quotable gestures. The mouthings used in AdaSL typically concern salient, idiosyncratic forms and combinations, rather than whole paradigms. Thus, frequent words and constructions are commonly found as mouthings, such as the equivalents of 'it is good', 'I like it', 'it is finished'. The same holds for loan translations, which typically concern frequent idiomatic expressions, such as the Akan equivalent of 'her head is hard', meaning 'she is wicked'. Based on the non-paradigmatic pattern of mouthings and loan translations, I argue that they are borrowings, resulting from recipient language agentivity. The same type of agentivity is likely to account for the presence of mouthings and loan translations in sign languages used by a large group of deaf users for which the presence of mouthings and loan translations, as well as initialization (the integration of handshapes motivated by fingerspelling) is often considered to be the result of the surrounding spoken language being the medium of instruction in the education of Deaf children. In Adamorobe, Deaf education has existed only for some months (see §1.3.4), and the only spoken language involved is English. The extensive use of Akan mouthings in AdaSL and their relatively autonomous behaviour indicates that Deaf education is not a prerequisite for the emergence of mouthings in a sign language.

Another feature that AdaSL shares with Akan is the separate marking of Cause of motion in the form of verb series. Like AdaSL, Akan uses a series of 'take' + Direction to mark a causative reading of the otherwise intransitive directional element. Though the development of this type of verb series in AdaSL may correlate with general features of spatial projections in AdaSL, the resemblance with similar series in Akan is striking and suggests that characteristics of spatial projections and intensive contact with Akan together have led to their emergence. The use of verb series in AdaSL seems to be the result of imposition, rather than of borrowing. Thus, the similarity between AdaSL and Akan concerns a syntactic structure, rather than a lexical item. As such, the shared form is paradigmatic, rather than incidental and thus is more likely the result of imposition than of borrowing. The presence of imposition in a minority language like AdaSL may seem surprising, particularly as there is no reason to assume that AdaSL has a higher prestige in Adamorobe than spoken Akan and hence that large numbers of L1 Akan speakers would shift to AdaSL. Obviously, the physical impossibility of L1 AdaSL signers to access the modality of spoken Akan

alters the patterns found in contact between spoken languages. Thus, L1 Akan speakers are forced to shift to AdaSL if they want to communicate with an L1 AdaSL signer.

Bearing similarity to co-speech gesture of the hearing, the characteristic lax articulation of AdaSL may also be the result of imposition. The lax articulation may be an "accent" of hearing L2 signers. For hearing L1 speakers of Akan, there is no obvious need to be perfect or without accent in AdaSL, given that at present no social or economical advantage is attached to having a native-like command of AdaSL. As the practical need to communicate is the main motivation to use AdaSL, a phonological or structural Akan accent in AdaSL is not problematic for L1 speakers of Akan. The presence of several types of Akan features in AdaSL, resulting both from recipient and source language agentivity, in addition to the presence of a blended form of Akan and AdaSL suggest that AdaSL has arisen in intense contact with Akan. Having emerged in this situation of intense contact, the Akan features in AdaSL should be characterized as contact-induced creation or emergence, rather than as contact-induced change. After all, there is no reason to assume that there has been an earlier variety of AdaSL that was less influenced by Akan.

In short, the influence of the surrounding spoken language has been attested in a wide variety of sign languages. In the sign languages used by a large group of deaf users, this influence typically takes the form of mouthings, loan translations or initialization, which are all the result of borrowing. In contrast, in AdaSL, the influence of Akan is the result of imposition as well as borrowing.

6.3.   Sociolinguistic setting and sign language structure - the role of Deaf education, deaf genes and primary users

6.3.1. Deaf education and 'deaf genes'

As has been discussed in section 6.3, the structure of AdaSL differs in some significant respects from what has been reported for sign languages used by a large group of deaf users studied so far. AdaSL is also different from the sign languages used by a large group of deaf users with regard to the phenomenon that led to its emergence. Whereas the well-studied sign languages used by a large group of deaf users arose in the context of Deaf education, the emergence of AdaSL was the result of a high incidence of a "deaf gene". Most of the differences between AdaSL and the sign languages used by a large group of deaf users with respect to sociolinguistic setting and ultimately with respect to linguistic structure can be attributed to this

distinction. The main question to be answered in the current section is how the phenomenon concentrating deaf people, i.e. Deaf education or a 'deaf gene', affects the social make up of the user community, and how this social make up in turn affects the structure of the sign language of the deaf community.

Although the early history of the current large Deaf communities is not very well documented, their rise is assumed to have been triggered by special education for the Deaf, or at least to have received an important impetus from it. The documented cases of Nicaraguan Sign Language (Kegl et al., 1999) and Mauritian Sign Language (Adone, 2004) illustrate this scenario. Both special education for the Deaf, as well as the industrialized society in which this type of education is typically found, lead to shared experiences by deaf people and hence a feeling of a shared Deaf identity. In addition, the fact that Deaf schools are often boarding schools encourages the separate socialization of Deaf people. The schools do not only lead to a concentration of Deaf people, but also to a social separation of the Deaf pupils from hearing people for a considerable part of their youth.

Communities with a high concentration of deaf people as the result of a genetic condition, rather than of special education, are repeatedly reported to be very different in their perspective on deafness (Kisch, 2006; Marsaja, 2003; Washabaugh, 1986; Groce, 1985). Firstly, the presence of deaf adult role models makes it less likely that parents of deaf children have preconceived ideas about deafness, normalizing the status of deaf children and adults. Secondly, economic activities should be more evenly distributed in such communities (as they are in Adamorobe) and equally accessible to deaf and hearing people. As a result, deaf and hearing people have more shared experiences than non-shared experiences. There are too few non-shared experiences for a separate Deaf community to arise.

6.3.2. The ratio of primary and secondary language users

Although the above sketch of groups of deaf people brought together by either Deaf education or by a "deaf gene" is very simplified, it clarifies an important distinction between the types of signing communities. The practical implication of the presence or absence of a feeling of Deaf identity concerns the proportion of dominant and non-dominant users in a signing community. AdaSL differs significantly from sign languages used by a large group of deaf users like NGT in the percentage of hearing and speaking people using the sign language. The large majority of people using NGT are deaf. Even though they may have a good command of Dutch, the surrounding spoken language, NGT is their primary language and the one they mostly use.

In Adamorobe, the proportion of dominant and non-dominant users is strikingly different. The group of deaf people using AdaSL consists of around 35 people (2% of the total population). Yet, they are not the only ones using the sign language. Considering the fact that deaf people of Adamorobe live and work with their hearing relatives, it is very likely the case that most of the people using AdaSL on a daily basis are in fact hearing people, communicating with a deaf relative, friend, neighbour or customer. In Bengkala, the "deaf village" in Indonesia, Marsaja (2003) finds that 97% of the users of the local sign language Kata Kolok is hearing. Whereas most or all of the communication of deaf people in Adamorobe happens through AdaSL, most of the communication of an average hearing signer is likely to happen in Akan. Despite the fact that AdaSL is a constant element in the lives of hearing signers, AdaSL is a secondary language for them, even though they may have learnt it from childhood. At present, no information is available on the age of onset of AdaSL acquisition for hearing signers. In Bengkala most hearing signers, notably those with no deaf relatives, started learning the local sign language once they were adults (Marsaja, 2003). It is not unlikely that the acquisition pattern is quite similar in Adamorobe, but additional research is needed to verify this. For now, it seems safe to conclude that the majority of AdaSL users are non-dominant users of this language, whose dominant language is Akan.

The large proportion of L2 users of AdaSL whose L1 is Akan is also interesting in view of the power balance between the two languages. Between Akan and AdaSL, the former is likely to be the socially and economically dominant language, in view of the subtle, but undeniable social stigma associated with deafness in Adamorobe (see §1.3.5) and the small number of users fully dependent on AdaSL. Typically, the shift to or the acquisition of another language by a large group with the same L1 is motivated by economic factors. If indeed Akan is the dominant language in Adamorobe, the shift of a large group of Akan speakers to AdaSL is unexpected. Obviously, the physical inability of users of the non-dominant language (AdaSL) motivates the unusual pattern of considerable numbers of L1 users of a dominant language learning a non-dominant language for other than economic reasons.

In short, both deaf education and a "deaf gene" bring together enough deaf people for a sign language with generational depth to emerge. Although deaf schools are often perceived as creating an environment of intense language contact and hence increasing the presence of contact-induced spoken language elements in a sign language, the present study suggests that Deaf education can have a quite different effect on the contact situation of a sign language. Schools for the Deaf concentrate deaf children, at the same time socially separating them from hearing children. This

concentration (and separation) results in signing communities consisting almost exclusively of deaf signers, i.e. in sign languages mainly used by L1 users. A high incidence of hereditary deafness, on the other hand, results in signing communities consisting of a handful of deaf signers (read: L1 users) and a much larger number of hearing signers (read: L2 users).

6.3.3. The influence of L2 users on sign language structure: imposition and the use of iconicity

The difference between large sign languages and AdaSL with respect to the proportion of L1 and L2 users is reflected in the types of contact-induced elements found in these sign languages. As both deaf signers of large sign languages and deaf signers of AdaSL are a minority in a larger society with another, spoken dominant language, the presence of contact-induced spoken language elements in both types of sign languages through borrowing or recipient language agentivity comes as no surprise. A difference between large sign languages and a sign language like AdaSL becomes apparent when considering the presence of structures resulting from source language agentivity or imposition. Given that sign languages used by a large group of deaf users are mainly used by deaf, L1 users, the role of imposition – by definition brought about by L2 users – is expected to be minimal. As the majority of AdaSL users are L2 users, the role of source language agentivity or imposition is expected to occur. Indeed, AdaSL has at least one structure that can be characterized as imposition of an Akan structure, i.e. the use of serial verb constructions to express spontaneous and externally controlled motion, including the use of grammaticalized markers of Cause of motion. However, the use of this type of serial verb construction is not the only feature of AdaSL in which the large proportion of L2 users is visible. In the following sections, I will argue that some of the features in which AdaSL is found to differ from sign languages used by a large group of deaf users, notably features at the sub-lexical and articulatory level (see §6.3.1 above), and the use of iconicity (see §6.3.2), space (§6.3.3) and simultaneity (§6.3.4) in AdaSL, are the result of the large proportion of L2 users as well.

To understand how these features can correlate with the large proportion of L2 users, we need to reconsider the role of iconicity in sign languages, and in what respects the use of iconicity differs across different types and stages of sign languages.

6.3.3.1 Variation in iconicity across sign language types

Three of the features in which AdaSL differs from sign languages used by a large group of deaf users, i.e. the use of iconicity, simultaneity and space, are interrelated to a considerable extent in sign languages. A high degree of

iconicity in the linguistic representation of events generally corresponds with a relatively high degree of simultaneity and at least some use of space. This is due to the fact that real-life events generally feature a multitude of simultaneously occurring sub-events, and typically have some kind of spatial orientation.

Several studies address the increase or decrease of iconicity and/or simultaneity in sign language varieties, whereby two seemingly opposed views are vented. Firstly, Frishberg (1975) finds that lexical items of earlier variants of ASL are multi-channelled to a greater extent and make use of a larger signing space than more recent variants. The concentration of lexical items on the hands and the reduction of the signing space, in addition to a number of other changes, lead to a reduction in the degree of iconicity of the lexical items. In the same vein, several studies on home and rural sign languages report a higher degree of iconicity, a large signing space and extensive use of multi-channelledness (Dolman, 1986; Ferreira-Brito, 1983; Kendon, 1980; Kegl et al., 1999). In these studies, no correlation is claimed to exist between the presences of these features. However, the same correlation between iconicity and articulatory features such as the size of the signing space and the degree of multi-channelledness in the ASL lexicon is likely to exist between the large signing space, the high degree of multi-channelledness, as well as the small set of unmarked handshapes in home and rural sign languages. Relevant here is that these studies thus suggest that sign languages with no group of deaf users and younger sign languages have lexical items that are more iconic than older sign languages used by a large group of deaf users.

In contrast, Cuxac (2000, 2001), in his theory on the genesis of sign languages, argues that it is older sign languages that exploit iconicity to a fuller extent. He claims that sign languages with a long history of Deaf education have conventionalised and systematically exploit the split between two meaning-bearing systems; on the one hand a fixed, conventional lexicon (much like in spoken languages) and on the other hand the three "highly iconic structures", which are character perspective or referent projection on the signer, the projection of an event on the limited space in front of the signer (see §5.2.1), and size and shape specifiers (see §4.2).

This hypothesis is partly confirmed by the study of Senghas & Littman (2004), which compares the expression of motion in Spanish co-speech gesture, in the newly emerged Nicaraguan Sign Language and in Spanish Sign Language (LSE), which has a long history of Deaf education. Spanish co-speech gesture and LSE score equally high in the number of aspects of the motion represented in a single form. The authors claim that LSE differs from Spanish co-speech gesture in the discreteness of the individual motion aspects combined. Co-speech gesture combines the

aspects in a holistic way, whereas LSE combines the discrete elements in a more conventional, structured, and combinatorial way. Nicaraguan Sign Language represents significantly fewer motion elements in a single form on the average and employs sequences of signs to represent several aspects of a motion event. LSE, which is much older than Nicaraguan Sign Language, is not only more simultaneous in this respect, but also more iconic as in the narrated event the motion aspects all occur simultaneously. Senghas & Littman thus provide arguments for a developmental trajectory for classifier predicates of motion starting off with simultaneous, holistic, iconic units in gesture, which are broken up into sequential, semantically light units in young sign languages and may subsequently be combined back into simultaneous, iconic units, but this time in a systematic/conventional way, in older sign languages.

The findings on the iconicity in lexical items do not necessarily contradict the findings on iconicity and simultaneity in one of the highly iconic structures, i.e. classifier predicates of motion. When sign languages develop in time from a collection of home sign languages to a conventional sign language with a stable group of deaf users, a tendency towards increasing the arbitrariness of lexical items with time may exist side by side with the tendency towards an increasing and systematic exploitation of iconicity and simultaneity in productive structures. In the next section, I discuss how AdaSL patterns in this respect.

6.3.3.2 Iconicity, space and simultaneity in AdaSL reconsidered

Having distinguished between iconicity in lexical items and iconicity in productive constructions, we need to reconsider the AdaSL data. Firstly, the degree of iconicity of the AdaSL lexicon relative to large sign languages cannot be evaluated due to the lack of comparative data, as stated above. In 6.3.3.1 I argued that the size of the signing space, the high degree of multi-channelledness and the small set of unmarked handshapes repeatedly reported for sign languages with no stable group of deaf users is related to the relatively high degree of iconicity in the lexicon. In the same vein, the use of a large signing space, a higher degree of multi-channelledness (e.g. in the form of the leg as an articulator), and the small set of unmarked handshapes suggest that the AdaSL lexicon may indeed be more iconic than that of sign languages used by a large group of deaf users. The question I want to consider here is whether the relatively large signing space, the relatively small set of unmarked handshapes and the relatively high degree of multi-channelledness in AdaSL can be related to the large proportion of L2 users. As attested in the early days of sign linguistics, iconicity is a factor irrelevant for some aspects of sign language usage by native signers. Notably in the acquisition and processing of sign language by L1 users, iconicity

plays a minimal role (Lieberth & Gamble, 1991; Morgan, Barriere & Woll, 2003; Petitto, 1994; Marshall, Woll, Atkinson & Thacker, 2006). Interestingly, L2 signers appear to differ significantly from L1 signers in their use of iconicity; late learners learn iconically transparent signs more easily and retain them longer than non-iconic signs. This finding is highly relevant for the appreciation of iconicity in AdaSL, as most of its users are (probably late) L2 users. The need to cater for the large majority of L2 users of AdaSL may thus cause the maintenance of a high level of iconicity in lexical items, despite the time-depth of the language. A concession towards perception at the cost of production seems appropriate in a language with a high proportion of L2 users. Perhaps the tendency found in non-native signing to proximalize articulation, resulting in signing in a larger signing space, is also a factor in the maintenance of a large signing space in AdaSL.

Secondly, considering the productive use of the "highly iconic structures" - character perspective, the projection of an event on the limited space in front of the signer by means of entity classifier predicates and referential loci, and size and shape specifiers-, we have seen that AdaSL differs considerably from the sign languages used by a large group of deaf users. These structures are characterized by heavy simultaneous packaging and meaningful usage of space. As described in §6.3.3 and §6.3.4, AdaSL makes relatively little use of highly iconic structures: although it does use character perspective extensively, it does not project events on the limited plane in front of the signer. Expressions of size and shape were found to be less heavily packed with simultaneous elements and to make little meaningful use of space. At least in some of these respects, AdaSL patterns with sign languages with no stable group of deaf users.

Cuxac (2000) claims that only sign languages with a long history of Deaf education develop highly iconic structures. Following the argumentation in §6.4.2, I think the label 'sign languages with a long history of Deaf education' should be rephrased in more linguistic terms as 'older sign languages with a majority of L1 users'. Once rephrased, this claim accounts for the AdaSL data, at least when it comes to the projection of an event on the limited plane in front of the signer and the use of (tracing) size and shape specifiers.

The restricted exploitation of simultaneity in AdaSL in general, correlated with the use of highly iconic structures, can be accounted for by the large proportion of L2 users in the sense that their L1 is more sequential in nature. Indeed, other types of sign languages involving users with a more sequential, spoken L1 also have a more sequential structure, such as the secondary sign languages of several Aboriginal groups in Australia, Kendon (1988) and contact varieties of sign languages, such as Signed English (Lucas and Valli, 1989:30).

Unlike these secondary and contact sign languages (including the blended form of Akan and AdaSL), the "pure" AdaSL does not reflect the organization of Akan. As such, the low degree of simultaneity cannot be perceived of as a direct result of the copying of the sequential organization of spoken Akan. However, even without directly adopting Akan structures, AdaSL may abstain from developing highly iconic and simultaneous structures to keep the language accessible to L2 users whose L1 is more sequentially organized.

An additional motivation is that the high degree of simultaneous packaging as exposed in the highly iconic structures may be a marked feature for the human language learning brain in general. This argument is substantiated by the observation that entity classifier predicates are acquired very late by natively signing children. They are acquired only with difficulty by learners with a spoken L1 (Kantor, 1980; Schick, 1990; Slobin, Hoiting, Kuntze, Lindert et al, 2003; Tang, Sze & Lam, 2004).

The AdaSL data show that the proportion of L1/L2 users more significantly influences the development of highly iconic structures than the age of a sign language. The effect of age on the development of highly iconic structures in a sign language only becomes relevant once the sign language has a sufficiently high proportion of L1 users.
Interestingly, the fact that AdaSL does exploit simultaneity involving spoken language elements, such as the mouthings for colour and size and shape, suggests that the language does allow for simultaneity when this is comprehensible to Akan speaking L2 users of AdaSL.

Summarizing §6.3.3, the differences found to exist between AdaSL and sign languages used by a large group of deaf users correlate with difference in the social make-up of the user communities. The crucial difference between the AdaSL and large sign languages appears to be presence of a Deaf community. Whereas Deaf education brings together deaf people with a Deaf community as a result, a 'deaf gene' brings together deaf people who remain thoroughly integrated in the larger hearing community. As a result, the presence of a Deaf community implies a signing community consisting mainly of L1 users. The extensive presence of a deaf gene implies a signing community consisting mainly of L2 users. The proportion of L1/L2 users is reflected in the structure of a sign language. This influence is mainly visible in the domain of iconicity, both in lexical items as well as in the so-called 'highly iconic structures'.

In lexical items, I argue that there is a correlation between the degree of iconicity and articulatory features such as the size of the signing space, the set of handshapes and the degree of multi-channelledness. In sign languages with a large proportion of L1 users, the degree of iconicity in

lexical items decreases, resulting in a decrease in the size of the signing space and in the degree of multi-channelledness and an increase in the size of the set of handshapes as well as their markedness. In sign languages with a large proportion of L2 users, the level of iconicity remains high, correlating with a large signing space, a high degree of multchannelledness and a small set of unmarked handshapes.

When it comes to highly iconic structures, i.e. referent projections, events projected on the limited plane in front of the signer, and size and shape specifiers, sign languages with a large proportion of L1 users have repeatedly been reported to use them. These structures are characterized by heavily simultaneous packaging of information and by their iconic use of space. In AdaSL, only referent projections are extensively used (see §5.4.1.2 & §5.4.3.1). I have argued that the restricted use of highly iconic structures, together with the restricted use of simultaneity and space is a result of the large proportion of L2 users of AdaSL, as their first language is more sequential in nature and as highly iconic structures, notably entity classifier predication, are hard to acquire in general.

Summarizing §6.3, I argue that sign languages with mostly L1 users have the freedom to maximize the use of the possibilities as made available by the modality, i.e. the use of structural iconicity and simultaneous representations. Sign languages with a majority of L1 users allow for an increasingly fixed, conventional and arbitrary lexicon on the one hand and a productive system of highly iconic structures on the other.

The fact that, typically, these L1 users are bilingual in the surrounding spoken language, leads to contact-induced elements in the sign language through borrowing. AdaSL, with a considerable proportion of L2 users with the same spoken L1, shows influences of the spoken L1 in the form of Borrowing as well as Imposition.

In addition, I argue that restricted use of highly iconic structures and of simultaneity in general, as well as the maintenance of a high level of iconicity in lexical elements, despite the generational depth, is due to the large proportion of Akan-speaking L2 users.

6.4.   Conclusion and suggestions for further research

The present study finds that AdaSL is a fully functional and conventional sign language that differs significantly from sign languages used by a large group of deaf users in sociolinguistic setting as well as in structure. It has a home sign like phonology, a preference for entity depiction, a restriction to real-size spatial projections, a considerable influence from spoken Akan in

the form of borrowings and imposition, and generally a low degree of simultaneity. An interesting object for further research is the restrictions and possibilities governing the use of space. It will shed light on the interrelatedness of structural features in the development of conventionalized iconic structures like the classifier predicates, spatially modified agreement verbs and anaphoric loci in space. At a regional level, it will be interesting to see to what extent features of AdaSL are areal in nature, particularly the preference for entity depiction and the restriction to real-size spatial projections.

I have argued that the preference for entity depiction is an idiosyncratic feature of AdaSL and that the restriction to real-size spatial projections may be an areal feature. As for the remaining characteristics, this thesis argues that they correlate with the high proportion of Akan-speaking L2 users of AdaSL. In the same vein, I argue that the decrease in the degree of iconicity in these items on the one hand, and the development of highly iconic productive structures on the other is a characteristic of sign languages used by a large group of deaf users. In particular, these developments in the use of iconicity are related to the majority of L1 users in these communities. This majority allows for the loss of iconicity in lexical items as well as for the free and full conventional exploitation in productive constructions of the possibilities for iconicity and simultaneity offered by the modality. If one has a unidirectional developmental cline in mind, one may be inclined to conclude that AdaSL finds itself somewhere on the developmental cline between home sign and "full fledged" sign languages. I argue, however, that, despite the similarities between both AdaSL and home sign languages and AdaSL and sign languages used by a large group of deaf users, AdaSL should not be considered a "half-way" sign language. Just as International Sign and secondary sign languages of hearing signers are not developmental stages of an ultimate visuo-gestural language, but rather examples of the different forms a visuo-gestural language may take, AdaSL is a type of sign language on its own that is *on a par with* the sign languages used by a large group of deaf users. Having declined the path towards highly iconic productive structures, AdaSL proves that old, stable sign languages, that have arisen and are used in the context of deafness, are not obliged to make use of modality specific structures like classifier constructions or simultaneous constructions, but may develop alternative structures in response to the sociolinguistic setting of the language. Thus, AdaSL is not the home sign language like context dependent language Washabaugh claims Providence Island Sign Language to be. Rather in line with Jepson (1991), I find AdaSL to be maximally adjusted to the sociolinguistic setting it is used in.

Transcending the field of sign linguistics, AdaSL illustrates the highly flexible nature of the human capacity for language. Modality appears not to compel the development of particular structures, but rather to provide the development of such structures as an option. Once again, the human language capacity appears to be highly flexible and adaptive to the possibilities and requirements of the sociolinguistic environment. Depending on the sociolinguistic environment, languages differ in modality, conventionalization, and their use of iconicity. They strike a balance between being maximally functional and between being maximally economical, in response to the restrictions and possibilities imposed by the sociolinguistic setting. Hence, the sign language of a group of deaf signers differs importantly from that of a group of Deaf signers.[50]

Similarly, the sign languages of deaf children and adults living in a more or less entirely hearing environment maximally exploit the possibilities for effective, but economic communication. Hence, I think the term home sign language is more appropriate as a general term for this kind of communication than the term home sign system. I have the impression that the use of the term 'system' instead of 'language' is motivated mainly by the struggle for the recognition of sign languages as legitimate objects of linguistic study. To achieve this, national sign languages used by a large group of deaf users have been argued to be radically different from other types of signing, notably home sign languages, which are typically denied the status of language. The arguments are that the signing of isolated deaf children living in a hearing environment is functionally limited, that there is no user community and that there is no generational depth. For several reasons, I think that withholding the predicate of 'language' from this type of signing is not correct. Firstly, the communication systems of average isolated deaf adults around the world are likely to be functionally more extensive than the home sign languages described in the well-known studies of Goldin-Meadow (e.g. 2003). Goldin-Meadows research focuses on the situation of isolated deaf children being raised in a strictly oral setting as the result of a very specific educational policy. Secondly, isolated deaf signers communicate with their relatives and friends, with whom they form a community of users.

In my view, the absence of generational depth is not sufficient to disqualify home signing the status of human language. Although lacking the status of language in the field of sign linguistics so far, home sign languages are often seen as the predecessors of sign languages used by a large group of deaf users, and as such worthy of linguistic study. The question of what to do with the forms of signing used by deaf individuals who are neither

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[50] As noted earlier, 'Deaf' with a capital D refers to a cultural perception of deafness, rather than the physical or medical perception of it.

isolated home signer nor members of a large, stable group of deaf users is typically brushed under the carpet. Thus, the sign languages that have emerged in (isolated) deaf families, in urban settings outside the context of Deaf education or in villages with a high incidence of deafness, as well as the sign languages exclusively used by hearing signers are severely understudied. As a result of the focus on 'full-fledged' sign languages on the one hand and home sign languages on the other, all other types of sign languages are either tacitly assumed to be somewhere on a developmental cline between home and 'full-fledged' sign languages, or to be a form of gesture.

Now that the battle for the recognition of sign languages as full human languages has been fought, it is time to open the eyes to the varieties of sign languages that do not fit into the clear-cut boxes of either a sign language of a large, stable group of deaf users, or a sign language of an isolated deaf person. It is the non-canonical sign languages – i.e. sign languages with a small group of deaf users, sign languages with no deaf users, but hearing users with diverse linguistic backgrounds instead, sign languages with a considerable group of deaf users that lack a sense of Deaf identity, etcetera – that provide a powerful tool for the analysis of the relation between the sociolinguistic setting of a sign language and its structure. These non-canonical forms allow us to determine what exactly the effect is of each ingredient of the sociolinguistic cocktail on the structure of the language used in that environment.

 With its wonderful linguistic diversity on the one hand, and the unfortunate shortage of education for the Deaf, Africa has generated a wealth of "non-canonical" sign languages and types of gestural communication, virtually all of which are severely understudied. The ever progressing adoption of foreign sign languages in Deaf education on the continent puts time pressure on the possibility of studying this richness.

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SUMMARY

Adamorobe Sign Language is the sign language used in the village of Adamorobe in
Ghana. This sign language has evolved as a result of the high hereditary deafness incidence in this village. Adamorobe has approximately 1400 inhabitants, more than 30 of whom are deaf.
The main spoken language in the village is Akan, a Kwa language. This thesis aims to give a description of aspects of Adamorobe Sign Language (AdaSL) and to compare these with other sign languages as well as with Akan. It attempts thus to contribute to our knowledge of possible structures in human language and in languages in the visual modality in particular. More than spoken languages, the sign languages studied so far show structural similarities.

These corresponding structures seem to be motivated by the communicative channel used by sign languages – that is, the visual-spatial modality. However, the well-studied sign languages not only share their modality, but they also occur in corresponding, rather specific social conditions. Thus, most of well-studied are relatively young, they are used by rather large Deaf communities, have an atypical acquisition pattern and a history of suppression. Home sign languages –sign languages of deaf people who do not regularly communicate with other deaf people- arise in radically different circumstances and are therefore much more divers in structure. It is commonly assumed that large sign languages have arisen from the merger of several home sign languages as documented in the case of Nicaragua Sign Language.

The considerable structural variety in home sign languages and the relatively great similarity between large sign languages suggest that languages develop along a unidirectional path leading to structural convergence. Sign languages arisen and used in hearing communities also appear to have a different structure. However, the differences in the social settings of these three types of sign languages differ to such an extent that it is hard to establish which ones are really relevant. The differences in social settings between AdaSL and large sign languages are relatively small and enable us to evaluate the influence of these differences. Thus like the large sign languages AdaSL has a community of deaf people and a comparable time depth.

A significant but well defined difference concerns the intergenerational transmission. In large deaf communities transmission is hampered by the fact that most deaf children are born in hearing families. In Adamorobe a deaf child is surrounded by signing relatives from early on. In

addition, there seems to be a difference in the experience of deafness, in particular in the lack of a distinct Deaf community.

The chapters 2, 3, 4 and 5 of this thesis give a comparative description of a number of AdaSL aspects. In chapter 2 it becomes clear that if we compare AdaSL to NGT, a large sign language, the former uses considerable sign space, has many lexical signs with a non manual element and a small set of unmarked hand shapes. AdaSL rather resembles home sign and young sign languages in these respects.

Chapter 3 deals with the lexicon, specifically the semantic fields of relationship, colour, numbers, time and names. The lexicon appears to be strongly influenced by Akan considering the frequent use of mouthings and loan translations.

Chapter 4 describes various ways of expressing form and size in AdaSL. In a number of ways AdaSL diverts significantly from what is common in the large sign languages so far studied. This is particularly notable in the use of so called measure stick signs. These measure stick signs are also used by hearing people in Ghana and other parts of Africa. Moreover AdaSL has standard signs to indicate a relative size which do not, as seems to be the case in other sign languages, adapt to the absolute size of the entity in question.

Chapter 5 describes expressions of motion. A structure that seems to be common in almost any large sign language is the so-called classifier-construction. Whereas handle classifier constructions typically express externally controlled motion, entity classifier constructions typically express internally controlled motion. AdaSL rarely uses handle classifier constructions to express externally controlled movements. Moreover, AdaSL appears not to make use of a system of entity classifiers.

In AdaSL the usual way to indicate movement is through ´directionals´. These movement signs (which can be spatially modified) each express a basic movement pattern of movement regarding the cause of the movement e.g. TOWARDS or ENTER. They may occur in a series with a sign expressing manipulation (e.g. TAKE) or expressing a way of moving (such as RUN), thus specifying the Cause of the movement.

From the descriptive chapters a pattern of features typical of AdaSL arises. These are discussed in chapter 6.

Firstly AdaSL appears to strongly favour representing forms by entity depiction over the depiction of the outline. In this respect AdaSL differs from NGT and other large sign languages. In the case of home sign and large sign languages literature does not mention a difference in preference where entity depiction is concerned. Thus, the 'preference' for entity depiction seems to b e a matter of a language specific characteristic.

Secondly AdaSL appears to use space in a significantly different way as compared to other large sign languages. AdaSL uses but one spatial projection and that is projection on a (more or less) true scale. This has far reaching implications for the structure of the language. Thirdly AdaSL appears to make limited use of the possibilities offered by the modality for simultaneous and iconic representation. In this respect, AdaSL differs from the large sign languages so far described, rather resembling more strongly home sign languages and early forms of Nicaragua Sign Language.

Finally AdaSL appears to be thoroughly influenced by Akan, the spoken language of the village. Both formal reflections, in the form of mouth shapes and similarities with hearing gestures, and structural reflections, in the form of parallel semantic and syntactic structures were found.

The types of reflections of Akan that I found not only point at knowledge of Akan with the deaf signers, but it also points at a significant part played by hearing, Akan speaking signers of AdaSL. In the last sections of chapter 6 I discuss to what extent the differences between AdaSL and the large sign languages on the one hand and the similarities with other sign languages and Akan on the other hand can be related to differences and similarities in the social settings of AdaSL and the other sign languages. Of the five just mentioned patterns in which AdaSL appears to divert from the large sign languages I suspect that the latter three are connected with the social setting of AdaSL, i.e. the lack of space, the use of simultaneity and the iconicity and the reflections of the spoken language.

In chapter 1 of this book it was said that one of the characteristic differences with the large sign languages was that AdaSL has an unhampered transmission. More determining for the form of AdaSL though appears to be the absence of a distinct Deaf community with an explicit Deaf identity in Adamorobe. Deaf communities of large sign languages consist mainly of Deaf signers. The Adamorobe signing community mainly consists of hearing, bilingual signers. It is not surprising that the influence of the dominant spoken language is profound in the latter. Besides obvious reflections of Akan in AdaSL in the form of mouthings and parallels in lexical and syntactic structure, I moreover propose that the use of space, iconicity and simultaneousness is related to the influence of bilingual Akan speaking AdaSL signers.

In summary, social setting appears to have an unmistakable effect on the form and structure of sign languages. It is remarkable that AdaSL displays similarities at some points with large sign languages and on other points with small sign languages such as home sign languages. This does not mean however that AdaSL where its development is concerned is dwelling somewhere between these two types of sign languages. The structural similarities with Akan, as well as the languages specific characteristics prove

that this sign language has developed into its own direction. This proves that there is no unidirectional path of development for sign languages. Sign languages develop in the direction of a balance between being maximally economical and maximally functional.

SAMENVATTING (SUMMARY IN DUTCH)

Adamorobe Sign Language is de gebarentaal die gebruikt wordt in het dorp Adamorobe in Ghana. Het ontstaan van deze gebarentaal is het gevolg van de hoge incicdentie van erfelijke doofheid in dit dorp. Adamorobe heeft circa 1400 inwoners, van wie er meer dan 30 doof zijn. De belangrijkste gesproken taal in het dorp is Akan, een Kwa taal. Dit proefschrift beoogt een beschrijving te geven van aspecten van Adamorobe Sign Language (AdaSL) en deze te vergelijken met andere talen, met name andere gebarentalen en het Akan. Het hoopt daarmee bij te dragen aan onze kennis van de structuren die mogelijk zijn in menselijke taal en talen in de visuele modaliteit in het bijzonder.

Meer dan gesproken talen vertonen de tot dusver bestudeerde gebarentalen structurele overeenkomsten. Deze overeenkomende structuren lijken gemotiveerd door het communicatieve kanaal dat gebarentalen gebruiken –dat wil zeggen de visueel-ruimtelijke modaliteit.

Echter, de goed-bestudeerde gebarentalen bestaan ook in overeenkomstige, vrij specifieke, sociale omstandigheden. Zo zijn de meeste relatief jong, worden gebruikt door vrij grote Dovengemeenschappen, hebben een atypisch verwervingspatroon en een geschiedenis van onderdrukking. Home sign talen -gebarentalen van dove mensen die niet regelmatig communiceren met andere dove mensen- ontstaan in radicaal andere omstandigheden en blijken dan ook veel variabeler van structuur te zijn. Doorgaans wordt aangenomen dat grote gebarentalen ontstaan uit een samensmelten van home sign talen, zoals gedocumenteerd in het geval van Nicaragua Sign Language. De aanzienlijke structurele variatie in home sign talen en de relatief grote structurele overeenkomst tussen grote gebarentalen, suggereren dat gebarentalen zich ontwikkelen langs een unidirectioneel pad dat leidt naar structurele convergentie. Ook de gebarentalen die in horende gemeenschappen ontstaan en gebruikt worden blijken een andere structuur te hebben. De verschillen in sociale setting tussen deze drie types gebarentalen zijn echter zo groot, dat moeilijk te bepalen is welke verschillen precies relevant zijn.

De verschillen in sociale setting tussen AdaSL en grote gebarentalen daarentegen zijn relatief klein en maken een evaluatie van de invloed van deze verschillen mogelijk. Zo heeft AdaSL net als de grote gebarentalen een gemeenschap met dove mensen en een vergelijkbare tijdsdiepte. Een groot, maar afgebakend verschil betreft de transmissie. In grote Dovengemeenschappen wordt deze gehinderd door het feit dat de meeste dove kinderen in horende families geboren worden. In Adamorobe daarentegen zijn er van jongs af aan gebarende volwassenen in de omgeving

van een doof kind. Daarnaast lijkt er ook een verschil te zijn in de beleving van doofheid, met name in het ontbreken van een duidelijke Dovengemeenschap.

De hoofdstukken 2 tot en met 5 van dit proefschrift geven een vergelijkende beschrijving van een aantal aspecten van AdaSL.

In hoofdstuk 2 blijkt dat AdaSL een grote gebarenruimte gebruikt, veel lexicale gebaren heeft met een non-manueel element en een kleine set van ongemarkeerde handvormen vergeleken met Nederlandse Gebarentaal (NGT), een grote gebarentaal. In deze opzichten lijkt AdaSL meer op home sign en jonge gebarentalen.

Hoofdstuk 3 betreft het lexicon. De semantische velden van verwantschap, kleur, getallen, tijd en namen. Het lexicon blijkt in behoorlijke mate beïnvloed te zijn door het Akan, wat blijkt uit het vele voorkomen van *mouthings* en leenvertalingen.

 Hoofdstuk 4 beschrijft verschillende manieren in AdaSL om vorm en grootte uit te drukken. In een aantal manieren wijkt AdaSL sterk af van wat gangbaar is in de grote gebarentalen zoals tot nog toe beschreven is, met name in het gebruik van zogenaamde meetlat-gebaren. Deze meetlat-gebaren worden ook gebruikt door horende mensen in Ghana en andere delen van Afrika. Ook heeft AdaSL vaste gebaren om een relatieve grootte aan te geven, die zich niet –zoals in veel andere gebarentalen het geval lijkt te zijn - aanpassen aan de absolute grootte van de weer te geven entiteit.

Hoofdstuk 5 beschrijft uitdrukkingen van beweging. Een van de structuren die bijna zonder uitzondering in grote gebarentalen lijken voor te komen zijn de zogenaamde *classifier*-constructies. AdaSL blijkt slechts in beperkte mate gebruik te maken van *classifier*-constructies om extern aangedreven beweging uit te drukken. AdaSL blijkt geen systeem van *entity classifiers* te hebben. De gangbare manier om beweging uit te drukken in AdaSL is met behulp van '*directionals*'. Deze vervoegbare bewegingsgebaren drukken elk een basaal bewegingspatroon uit die neutraal zijn met betrekking tot de oorzaak van de beweging, bijvoorbeeld KOMEN of NAAR-BINNEN. Ze kunnen voorkomen in een serie met een gebaar dat manipulatie uitdrukt (zoals PAKKEN) of een manier van bewegen uitdrukt (zoals RENNEN), waardoor de ambiguïteit omtrent de oorzaak van de beweging opgeheven wordt.

Uit de verschillende hoofdstukken worden verschillende patronen zichtbaar die kenmerkend lijken te zijn voor AdaSL. Deze worden besproken in hoofdstuk 6.

Ten eerste blijkt AdaSL een sterke voorkeur te hebben voor het representeren van vormen door de hand direct voor de vorm te laten staan (*entity depiction*) in plaats van door de hand de omtrek te laten weergeven. In dit opzicht wijkt AdaSL af van NGT en andere grote gebarentalen. In de

literatuur wordt geen verschil in voorkeur voor *entity depiction* genoemd tussen *home sign* talen en grote gebarentalen. Het lijkt hier een taalspecifiek kenmerk van AdaSL te betreffen.

Ten tweede blijkt AdaSL de ruimte significant anders te gebruiken dan grote gebarentalen. AdaSL gebruikt maar een ruimtelijke projectie, namelijk projectie op (min of meer) ware schaal. Dit heeft belangrijke consequenties voor de structuur van de taal.

Ten derde blijkt AdaSL beperkt gebruik te maken van de mogelijkheden voor de simultane en iconische structuren die de modaliteit biedt. Daarin wijkt AdaSL af van de grote gebarentalen tot nog toe beschreven en lijkt ze meer op *home sign* gebarentalen en de vroege vorm van Nicaragua Sign Language.

Tot slot blijkt AdaSL grondig beïnvloed te zijn door Akan, de gesproken taal van het dorp. Zowel vormreflecties, in de vorm van mondbeelden en overeenkomsten met horende gestures, als structurele reflecties, in de vorm van parallelle semantische en syntactische structuren werden aangetroffen. De gevonden reflecties van het Akan duiden niet alleen op kennis van het Akan bij dove gebaarders, maar ook op een significante rol van Akan sprekende gebaarders van AdaSL.

In de laatste paragrafen van hoofdstuk 6 bespreek ik in hoeverre de gevonden verschillen tussen AdaSL en grote gebarentalen aan de ene kant en de gevonden overeenkomsten met andersoortige gebarentalen en het Akan aan de andere kant gerelateerd kunnen worden aan verschillen en overeenkomsten in de sociale setting van AdaSL en de andere gebarentalen. Van de vijf zojuist genoemde patronen waarin AdaSL blijkt af te wijken van grote gebarentalen stel ik dat de laatste drie samenhangen met de sociale setting van AdaSL, dat wil zeggen het ruimtegebruik, het gebruik van simultaniteit en iconiciteit en de reflecties van de gesproken taal.

In hoofdstuk 1 van dit boek werd gesteld dat een van de kenmerkende verschillen met de grote gebarentalen was dat AdaSL een ongehinderde transmissie heeft. Meer bepalend voor de vorm van AdaSL blijkt echter de afwezigheid van een distincte Dovengemeenschap met een uitgesproken Dove identiteit in Adamorobe. De Dovengemeenschappen van grote gebarentalen bestaan voornamelijk uit Dove, vaak ééntalige gebaarders. De gebarende gemeenschap in Adamorobe bestaat voornamelijk uit horende, tweetalige gebaarders. Het is niet verrassend dat de invloed van de dominante gesproken taal zichtbaarder is in de laatstgenoemde taal.

Naast duidelijke reflecties van Akan in AdaSL in de vorm van *mouthings* en paralellen in lexicale en syntactische structuur, stel ik dat ook het gebruik van ruimte, iconiciteit en simultaniteit te relateren is aan het grote aandeel van tweetalige Akan sprekende AdaSL gebaarders.

Ik concludeer dat de sociale setting een onmiskenbaar effect heeft op de vorm en structuur van een gebarentaal. Interessant genoeg vertoont AdaSL op sommige punten overeenkomsten met grote gebarentalen en op andere punten met kleine gebarentalen als home sign talen. Dit betekent echter niet dat AdaSL zich qua ontwikkeling ergens ophoudt tussen deze twee types gebarentalen. De structurele overeenkomsten met Akan, alsmede de taalspecifieke kenmerken van AdaSL wijzen uit dat deze gebarentaal een eigen richting is opgegaan. Hieruit blijkt dat er geen unidirectioneel ontwikkelingspad bestaat voor gebarentalen. Gebarentalen ontwikkelen zich in de richting van een balans tussen het economisch en functioneel optimum.

CURRICULUM VITAE

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