

## Aspectual Modulations on Adjectival Predicates

**11** To express certain distinctions in meaning in English one can use a single predicate in a variety of syntactic constructions to change its significance: *he is sick, he is rather sick, he used to be sick, he got sick again and again, he gets sick easily, he has been sick for a long time, he became sick, he tends to be sick*—all use the same form of the word *sick* in combination with added lexical items, independent words or phrases that change meaning. Alternatively, a distinction in English can be made by changes in the form of a word itself; for example, by suffixation, as in *sickness, sicker, sickly, and sicken*. Such processes represent morphological regularities basic to a particular language's structure.

Questions fundamental to the study of any language are, of course, what kinds of distinctions of meaning it makes by regular processes, and what form those distinctions take. In the study of a language in a mode other than speech, the answers to such questions can be especially elusive.

### A Red-Faced Explanation

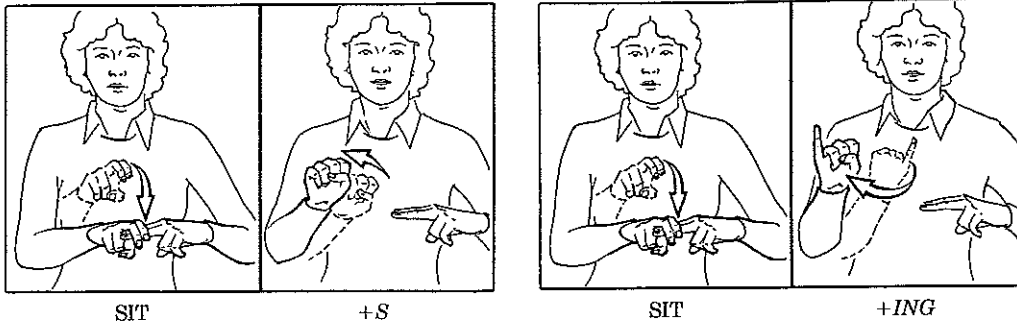
How easy it is to overlook the types and forms of distinctions special to ASL is well illustrated by one of our own experiences. In the early stages of our study we had no idea that the glosses we were using for individual signs represented anything other than uninflected sign forms. That verb signs changed direction to indicate arguments was patently clear, so directional changes were indicated in our transcriptions. But we did not notice the other ways in which signs varied.

Thinking of the common form of inflectional distinctions in spoken languages, we searched for sequential additions to signs in the form of

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This chapter was written in collaboration with Carlene Canady Pedersen.

Figure 11.1 Invented sign markers used to represent English morphemes, as in *sits* and *sitting*.



prefixes or suffixes. Morphological inflection in English typically takes the form of some sequential addition of phonological segments, as in, for instance, the forms of *walk* represented as *walks*, *walked*, *walking*. Some forms of signed English have been developed specifically to match English morphology and order, attaching invented sign markers to represent English affixes before or after a sign. Thus the English words *sits* and *sitting* are represented by the ASL sign *SIT* followed by separate sign markers invented for the English third-person present indicative and the English progressive inflections: for example, *SIT+S* and *SIT+ING* (see figure 11.1). Such loan translation suffix signs are used with ASL signs as a way of representing English on the hands. But we found no tendency within ASL itself to develop such sequential sign markers.

At one point, searching for clues to grammatical properties of ASL, we studied paraphrase, examining different ways of signing the same meaning (though at that time it was claimed that ASL had no grammatical structure, and, as a matter of fact, we then had no evidence to the contrary). One story in our paraphrase study, a story about an old fisherman out on the ocean all day, included the sentence: *His face became red in the wind*.<sup>1</sup> The dozen different deaf signers who rendered the story into ASL used different ways to indicate that the fisherman's face became red. A few signers used signs that matched the English sentence: *FACE BECOME RED*. Many did not use the sign *BECOME* in their renditions. Instead they signed sequences that we glossed as *FACE RED*, *RED FACE*, and *WIND [against face] RED*.

The omission of the sign *BECOME* might indicate that the signers simply ignored that English word in translating the sentence into ASL and signed instead that the fisherman's face was red. Another remote possibility was that there might be something in the manner of signing that expressed the change of state, 'became.' Among countless other questions about the number of hands used, the order of signs, and so

on, we asked deaf informants whether there was anything special about, perhaps, the signing of WIND or of RED. But we ourselves did not notice any distinctions that should be made, and RED, no matter how it was signed, was always written the same way in our transcriptions. One deaf person did tell us that one could sign RED to include the idea of 'redder and redder' by making successive repetitions, with the hand more tense and the movement more sharp each time. But only one rendition of the sentence had been signed in that particular way. In the unfocused questions we asked, the one answer that might have provided a clue slipped away.

Looking again at the videotaped stories of the fisherman whose face became red, we can now see that the sign RED was made in a variety of ways that we did not then distinguish, and it seems odd that we so steadfastly ignored these variations. For we were then on the threshold of discovering that to express many distinctions of meaning, ASL exhibits a rich system of *modulations* on the form of signs.<sup>2</sup> In retrospect it is we who are red-faced.

It has been easy for investigators to overlook modulatory changes on signs in ASL because of the special form they take in this visual-gestural language. Signs are simultaneous rather than sequential organizations of parameter values. Whereas English words are commonly inflected by the addition or substitution of phonemic segments (the change from *sit* to *sitting* adds the segments [ɪŋ], sound segments that are used in the formation of other words, such as *ring*), the modulations on signs we observed did not have the appearance of recombinations of prime values precisely like those used in basic lexical items. They appeared primarily to take the form of distinctions in dynamic qualities of movement superimposed on signs—distinctions in speed, tension, length. As we spotted more of these modulations, we asked ourselves what range of meanings they conveyed and how they were related to one another in form. We were also interested in how they compared in form and function to inflection in spoken language.

The word *inflection* is a cover term for two different phenomena. A vocal inflection is an alteration in the manner in which a word is pronounced—a distinction in tone of voice used to convey information. Such a distinction can be superimposed on any word, phrase, or sentence at the speaker's option. In the acting method of Stanislavski, for instance, speakers practice rendering a single word or phrase with many different vocal inflections to convey varying nuances of feeling or expression.<sup>3</sup> A grammatical inflection, on the other hand, is an entirely different kind of change: an alteration not in the manner in which a word is produced, but in the form of the word itself, for example, by

an addition (or substitution) of phonological segments.<sup>4</sup> Diagnostic of grammatical inflections is that they do not occur on just any word, but only on words in particular lexical categories; and further, that they are not optional but are required in certain linguistic contexts.

It appeared to us that the formational effects of modulations on ASL signs were in many ways similar to vocal inflections on spoken words. But the meanings encoded by these modulations suggested that they were more analogous in grammatical function to distinctions familiar in the study of spoken languages—inflections for number, person, aspect. We still had little idea of how widespread their use might be, or whether they in fact represented grammatical regularities in the language.

When we first began to notice some slight differences in the movement of signs and tried to capture the nuances of meaning represented by these changes, we asked questions like “In what sentences would you make this sign in that way?” The answer given by some deaf informants was “It depends on the mood,” which, taken at face value, would suggest that the manner of signing depended only on the nuance of feeling or emotion the signer wanted to convey; that these movement impositions were optional additions not prescribed by the syntax of the language. On the other hand, sometimes when we constructed a sentence containing a particular modulated form, native signers would tell us that the form could not be used in that sentence. Such judgments suggested that the occurrence of modulations did not simply “depend on the mood,” but—like the morphological inflections in spoken languages—was motivated by and restricted to certain linguistic contexts.

### Aspectual Modulations on Adjectival Predicates

Long after the fisherman story was properly buried in our files, Ms. Pedersen, herself a deaf native signer, took over the study of special mutations of signs which change their form and meaning. She noticed differences between two groups of adjectival predicates: signs like ANGRY, AWKWARD, EMBARRASSED, DIRTY, SICK were more mutable in certain ways than signs like PRETTY, UGLY, INTELLIGENT, STUPID, HARD, SOFT, TALL, SHORT. She used her own intuitions to study the ways in which the more mutable adjectival predicate signs can change in form and the nuances of meaning these changes evoke.<sup>5</sup>

Her study revealed that signs in the first group (signs like SICK) can be made with several variations in movement: a circular reduplicated form, an elliptical reduplicated form, a single quick thrustlike movement, a single accelerating movement, among many others. The kinds

of meanings encoded by such dynamic changes in the movement of a sign are meanings like those English usually renders discursively as *tend to get sick*, *get sick easily*, *sick for a long time*, *incessantly sick*, *get sick often*, and so forth. These changes in form, then, result in subtle changes in aspectual meaning, that is, distinctions that indicate such aspects as the onset, duration, frequency, recurrence, permanence, or intensity of states or events. Aspects, as distinct from tenses, are different ways of viewing the internal temporal consistency of a situation. Tense locates a situation in time (say, the past), whereas aspect considers the time course of the event itself: *He was sick often* and *he tended to get sick* may both refer to the same recurring episode, but they focus on it differently; the difference in focus is aspectual. Hockett's (1958) description of aspect as having to do with the temporal distribution or contours of an event in time seems especially apt with regard to ASL, for in ASL it is differing contours imposed on the movements of signs that reflect differing contours of events.<sup>6</sup>

#### *Examining an Aspectual Change: The Circular Modulation*

One of the regular changes in movement on a class of adjectival predicates identified by Ms. Pedersen is what appears in citation signing as a superimposed circular path of movement described by the hands. The meaning added to a sign made with this variation is 'prone to be \_\_\_\_\_' or 'has a predisposition to be \_\_\_\_\_.'

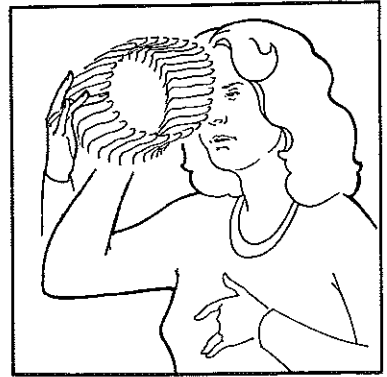
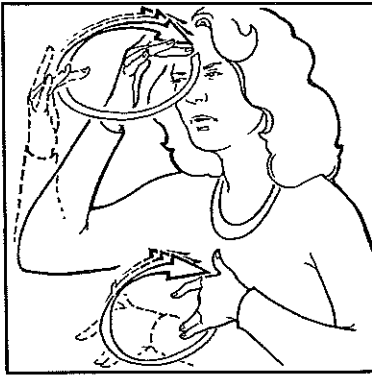
Consider the effect of this variation on the sign SICK, which is made in uninflected form with a simple iterated contact at the forehead, the hand in a bent mid-finger HC (see figure 11.2). When SICK undergoes the change in movement, the iterated contact at the forehead does not appear; instead, the hand approaches the forehead and, without pausing at the contacting point, circles around in a smooth continuous movement of three cycles. The kinesthetic effect of the resulting form is an elongated downward brushing that returns upward in an arclike movement and then becomes circular with repetition in a smooth continuous flow (see figure 11.3). The form of the modulation is not characteristic of the surface-form movement of any sign; it apparently involves an overall dynamic change that superimposes a certain contour on a sign.<sup>7</sup> In figure 11.3 the drawing on the left illustrates the number of cycles of the modulatory movement. The stroboscopic drawing on the right shows the movement of the hand throughout one cycle of the sign, one line for each videotape field. (Widely spaced lines represent rapid movement since the hand is traversing greater distances between images; narrowly spaced lines represent slow movement.)

The form of the circular modulation on SICK is archetypical of the modulation on other adjectival predicates: it is a regular formational



Figure 11.2 The uninflected sign SICK.

Figure 11.3 Two representations of SICK after undergoing modulation for predispositional aspect, meaning 'prone to be sick.'



variation. The characteristic smooth, continuous, reduplicated circular movement (which results from a rotary movement at the elbow joint) can be seen in the modulated forms of several signs illustrated in figure 11.4: SILLY, MISCHIEVOUS, ROUGH, WRONG, DIRTY, QUIET.

The movement components of the unmodulated forms of these signs vary greatly. SILLY (figure 11.4a) is made with a repeated twisting of the wrist; MISCHIEVOUS (b) with a repeated bending of the fingers; ROUGH (c) with a repeated brushing movement; WRONG (d) with a contact that is held; DIRTY (e) with an alternating wiggling of the fingers; QUIET (f) with a single downward movement. Under the modulation, certain characteristics of these movement components do not directly appear: the modulated SILLY has no twisting; the modulated MISCHIEVOUS and DIRTY do not display repeated wiggling but, rather, a single bending movement as the hand sweeps toward its tar-

get; ROUGH displays no repeated brushing; WRONG has no held contact; the single downward movement of QUIET becomes circular. In general, repetitions of the surface sign disappear; surface elaborations such as iterations and oscillations do not occur under this modulation. MISCHIEVOUS and SILLY provide special clues to the nature of the process. The unmodulated form of MISCHIEVOUS is made with the hand anchored at the forehead, two spread fingers bending repeatedly—the movement of the lexical sign is hand-internal only. Under the modulation, a single bending movement of the fingers is embedded within the movement of the hand toward the forehead as it sweeps past in a continuous motion; this embedded movement occurs within each of the reduplicated cycles of the modulation. The unmodulated form of SILLY has a twisting of the wrist. Under the modulation, neither the repetition nor the twisting movement occurs; rather, the sign is made with a circular continuous movement. These observations suggest that the modulatory processes operate on an underlying single movement value of the sign which is embedded in the larger reduplicated circular motion of the modulation.<sup>8</sup>

As Supalla and Newport (in press) have also noted, each cycle of a modulation operates on an underlying form of a sign, a form stripped of surface repetitions and elaborations. It is possible to predict, in fact, that repeated movement components will reduce to a single production of the component, embedded within the modulatory cycle.

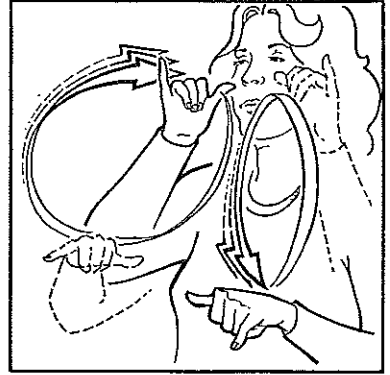
*Meaning of the modulation.* When a sign undergoes the circular modulation, its meaning is changed to 'prone to be \_\_\_\_\_' or 'tends to be \_\_\_\_\_' or 'has a predisposition to be \_\_\_\_\_.' We therefore call this the modulation for predispositional aspect.<sup>9</sup> Its meaning is exemplified in signed sentences such as the following:<sup>10</sup>

- (1) KNOW ONE BOY DEAF  $\widehat{\text{INSTITUTE}}$  (SELF) ALL-HIS-LIFE SICK[m:predispositional].  
I knew a boy at the school for the deaf who tended to be sickly all his life.
- (2) SISTER PAST ACCIDENT, SPOIL[id:'as a result'] FROM-NOW-ON[+] SICK[m:predispositional].  
My sister was in a car accident, and as a result, she now tends to be sick (*or is sickly*).
- (3) SON SHY[+], (HIS)[+] QUIET[m:predispositional].  
My son is shy. That's his way; he is characteristically quiet (*or is quiet by nature, is reserved*).
- (4) TROUBLE[+], BROTHER TEND  $\widehat{\text{(HIS)}}$  DIRTY[m:predispositional].  
What a problem! My brother characteristically gets dirty (*or is dirt prone*).

Figure 11.4 An array of ASL signs and their form under modulation for predispositional aspect.



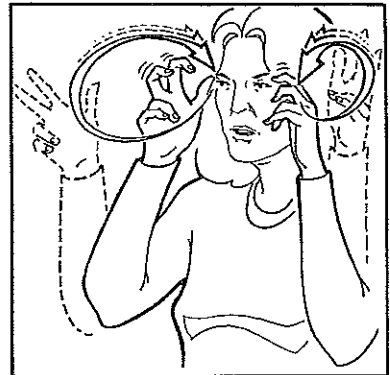
(a) SILLY



'characteristically foolish'



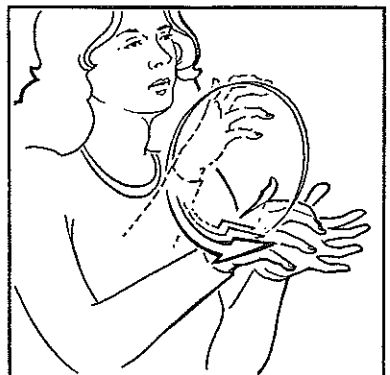
(b) MISCHIEVOUS



'mischief prone'



(c) ROUGH

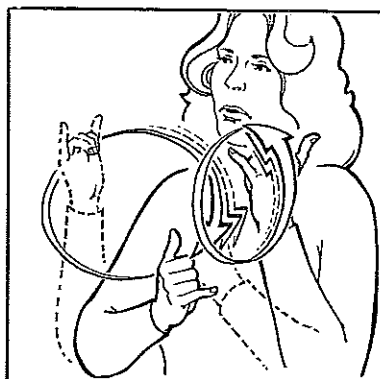


'cruel'

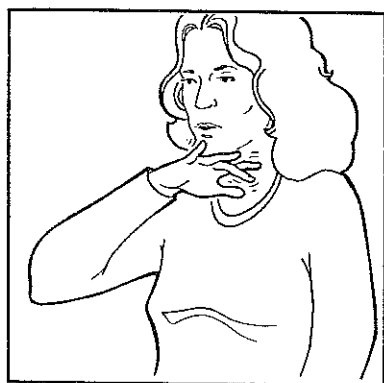




(d) WRONG



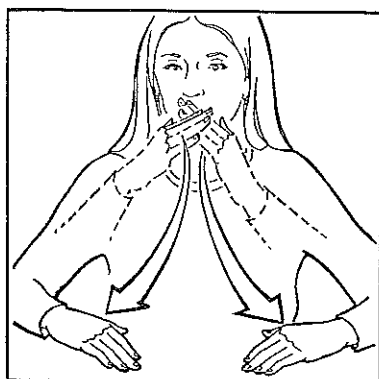
'error prone'



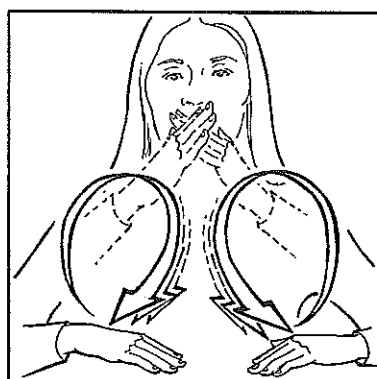
(e) DIRTY



'dirt prone'



(f) QUIET



'taciturn' or 'reserved'

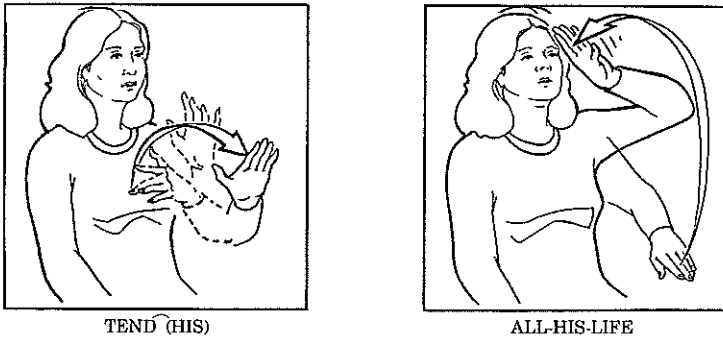
Not all adjectival predicates in ASL can undergo this modulatory process: signs like PRETTY, UGLY, INTELLIGENT, STUPID, HARD, SOFT, TALL, SHORT, OLD, and YOUNG do not; signs like ANGRY, AMBITIOUS, AWKWARD, DIRTY, and SICK do. The signs that do not accept the modulatory process apparently refer to inherent characteristics or long-lasting qualities. The signs that do undergo the modulation, on the other hand, refer to incidental or temporary states: a person may be angry at one time and serene at another.

Other adjectival signs generally characterizable as referring to incidental or temporary states include: AFRAID, ANGRY, CAREFUL, CARELESS, COLD ('feel cold'), CRAZY-ABOUT, CROSS, DIFFERENT ('changeable'), DIZZY, DOUBTFUL ('indecisive'), EMBARRASSED, EXCITED, FRUSTRATED, GUILTY, MISCHIEVOUS, NOISY, PAINFUL ('vulnerable to pain'), QUIET, SAD, SCARED, SILLY, SLEEPY, SORRY, TIPSY, WORRIED, WRONG. Adding the circular reduplicated movement changes the meaning of such adjectival predicates so that they describe a characteristic quality. When the ASL sign QUIET undergoes the circular modulation, as in sentence (3), its meaning changes to 'taciturn' or 'reserved,' that is, 'quiet by nature.' A transitory or incidental state is thus transformed by the modulation into an inherent characteristic. In English such shifts can be accounted for lexically: a person can be temporarily cross but characteristically ill-natured, temporarily afraid but characteristically apprehensive, temporarily sad but characteristically melancholic. In ASL, by contrast, the distinction is marked by a regular modulatory inflection.

*Expressive or morphological change?* Determining whether a modulation is an optional expressive change or a grammatical process means determining its regularity and generality within the language. Is the form consistently elicited within a particular linguistic context? Is the modulation obligatory in this context? Do different signers provide the same form? Is the form of the modulation regular across a class of signs? Is this a productive regularity obligatory in linguistic contexts even with invented signs?

One way to ascertain the regularity and generality of a modulation is to find a linguistic context in which the form is consistently supplied. For instance, some specific ASL signs—in particular, the signs TEND(HIS) and ALL-HIS-LIFE—often co-occur with adjectival predicates that have undergone the circular modulation (see figure 11.5). When we used these signs to create a sentence frame like SEE[+] BOY TEND(HIS) ALL-HIS-LIFE \_\_\_\_\_ and asked many deaf signers to fill in an adjectival predicate, they characteristically supplied the circular modulated form. (They did so without any discussion or prompt-

Figure 11.5 Linguistic context for eliciting signs modulated for predispositional aspect.



ing regarding uninflected form, modulations, aspectual meaning, or changes in the form of signs.)

That a modulation is obligatory in this context is indicated by the fact that native signers consistently report that sentence (5) is correct in ASL, but sentence (6) is not:

(5) BOY TEND (HIS) ALL-HIS-LIFE SICK<sub>[M:predispositional]</sub>.

That boy has tended to be sickly all his life.

(6) \*BOY TEND (HIS) ALL-HIS-LIFE SICK (uninflected).

The sign SICK cannot occur in uninflected form in this sentence frame. Deaf informants tell us that although the meaning is clear, it would be unnatural or not good American Sign Language, to use the uninflected sign; we interpret this to mean that providing an unmodulated form in that sentence is ungrammatical in ASL. (Perhaps failing to modulate the sign is analogous to omitting the past tense marker in the sentence \*Yesterday the boy jump, which is of course perfectly understandable, yet not grammatical in English.) Thus the inflection is not simply an emotive expression; the language requires it in this sentence context.

It is not the case that just any modulation is permitted in a given sentence frame. In the same ASL sentence context given above, one cannot modulate the sign SICK with other of the aspectual forms described below; these also would be rejected as not correct. The circular modulation represents the general form most appropriate in this context, most naturally provided.

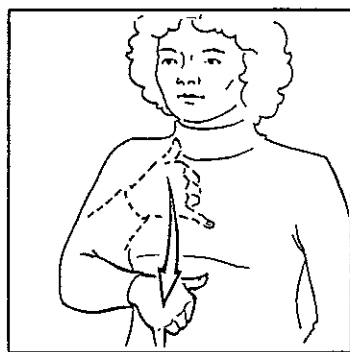
Moreover, different signers provide the same modulated form in this context; with the sign SICK, for instance, the modulation is always characterized by a smooth triplicated circular motion. Thus what we are eliciting are not just differences in stylistic presentations of individual signers.

The general form of the modulation appears consistent and regular across a class of signs (ANGRY, CARELESS, FRUSTRATED, SLEEPY, and so on): triplicated cycles of movement resulting in a smooth continuous path of the hands. Furthermore, the particular form of the modulation and the form of the uninflected signs on which it operates interact in specific predictable ways: contact at a specific locus is realized as an elongated brushing movement incorporated into the modulated form; surface repetitions such as iterated contact, repeated wrist twisting, or repeated brushings do not appear in the modulatory movements; single movement components such as hand-internal movements are embedded within the larger modulatory movement of each cycle. Thus the final specific form of the modulation is predictable from characteristics of the movement of the uninflected sign.

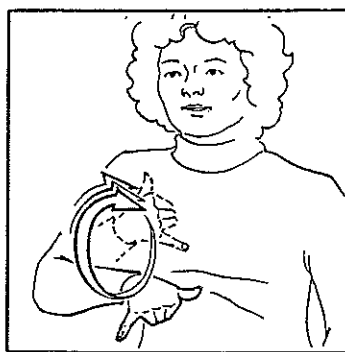
Finally, that this modulation is a productive regularity can be shown by inventing nonsense signs in ASL, pairing them with some arbitrary meaning, and introducing them in a linguistic context requiring the modulation. For instance, an invented sign made with a /Y/ hand in a downward brushing movement on the torso was paired with the meaning 'concerned.' Deaf signers, asked to sign the sentence BOY TEND (HIS) ALL-HIS-LIFE CONCERNED<sub>inv</sub>, made the invented sign with the circular modulation (see figure 11.6). Thus we are not tapping a process tied only to specific forms already existing in the language.

Several strands of evidence, then, indicate that the circular modulation for what we call predispositional aspect is not simply an expres-

Figure 11.6 An invented sign and its modulated form.



CONCERNED<sub>inv</sub>



Sign modulated for  
predispositional aspect

sive addition to the sign, depending on the mood. It appears to be a morphological process in the language.

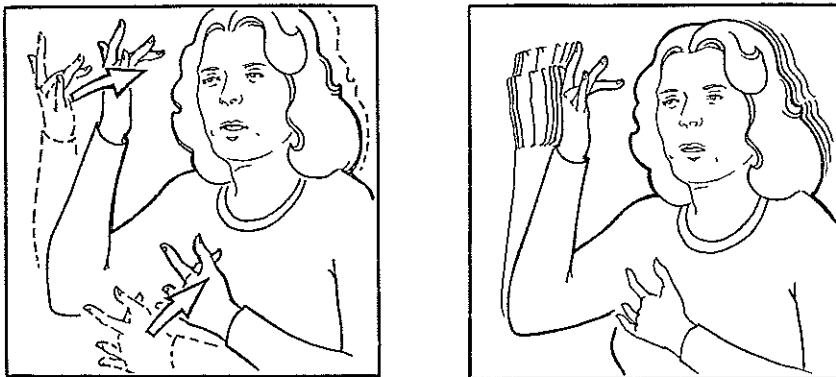
We have outlined our studies of one particular modulation in some detail; others will be described more briefly. For each modulatory movement, we have coined a term for its meaning and a term descriptive of its general form—not as a precise description, but rather as a shorthand reference to the overall visual impression the modulation lends to most signs.

*The Thrust Modulation for Susceptative Aspect*

Entirely different in form from the predispositional aspect, the modulation for susceptative aspect is not unrelated in meaning. This modulatory movement is not reduplicated; it is a single thrustlike movement combining a brief tense motion (tension in the forearm muscles) with a lax, soft handshape. We term this the thrust modulation. When SICK is so modulated, the iterated contact of the uninflected form does not appear; instead the modulation appears as a single, brief, rapid thrustlike movement made in the direction of the forehead, but with recoil stop before contact (see figure 11.7). When ANGRY is so modulated it is made with a brief thrustlike movement upward (fingers bending once as the hand moves) which is quicker and shorter than the uninflected form. When SILLY is so modulated it is made with a single brief thrustlike turn of the wrist.

This modulation for what we are calling susceptative aspect conveys

Figure 11.7 Two representations of SICK after undergoing modulation meaning 'susceptible to \_\_\_\_\_.'



SICK[m:susceptative aspect]

the meaning of being in a state of susceptibility to a quality, characteristic, or state. When the sign SICK is so modulated it means 'to get sick easily,' 'to be susceptible to sickness,' or colloquially 'to get sick at the drop of a hat.' With the sign EXCITED the thrust modulation changes the meaning to 'easily aroused to excitement.'

The unmodulated signs refer to transitory states; after modulation for predispositional aspect they refer to more permanent characteristics; after modulation for susceptative aspect they refer to a readiness for the state to develop or to a sudden change to that state. For example, a person could be generally good-humored by nature, but one day, if he were in a state of moodiness, it might take very little to arouse him to spite. Such a person would not be described by ANGRY[M:predispositional], which means 'embittered' or 'ill-natured' (or, to use the terminology of humors, 'choleric'). Rather, such a person would be described by ANGRY[M:susceptative], which means 'easily irritated' or 'ready to flare up at any moment.'

The meaning of the modulation for susceptative aspect is illustrated in the following ASL sentences:

- (7) KNOW FISH? SMELL[+], SICK[M:susceptative].

You know how fish smells? I get easily sick from that.

- (8) JOHN, SISTER SIMPLY TEASE[x:'him'], ANGRY[M:susceptative].<sup>11</sup>

All John's sister has to do is tease him, and he gets angry easily (or flares up).

- (9) URSULA SIMPLY DRINK[+] ONE[+], DIZZY[M:susceptative].

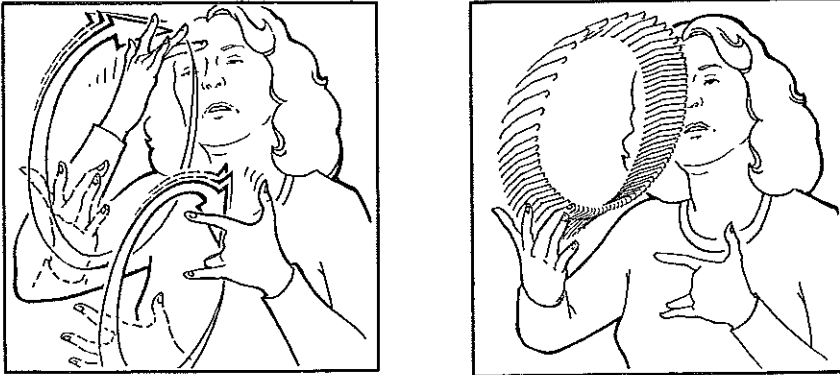
After just one drink, Ursula gets easily dizzy (high).

The thrust modulation is apparently limited to the class of adjectival predicates we have discussed here and cannot be superimposed on predicates referring to inherent qualities.

#### *The Elliptical Modulation for Continuative Aspect*

A slow reduplication that can be superimposed on signs was first described in Fischer and Gough (1973) and is discussed further in Supalla and Newport (in press). This modulatory form operates not only on the class of adjectival predicates referring to transitory states but on durative verbs, and it adds the same meaning to both: a quality or characteristic enduring over a prolonged span of time. The verb SIT modulated with a slow reduplication, which generally takes on an elliptical movement in overall visual form, means 'sit for a long time,' just as SICK so modulated means 'be sick for a long time' (see figure 11.8). Under the modulation on SICK there is a heavy slow downward brushing movement and a slow arclike return. In citation signing, there are characteristically three cycles; movement through each cycle is uneven. The general appearance of the modulation is a reduplicated

Figure 11.8 Two representations of SICK after undergoing modulation meaning 'for a long time.'



SICK[M:continuative aspect]

elliptical movement that is slow in rate and uneven in tempo (a heavy beat in relation to the target of the base form, for example).

The meaning of the modulation is exemplified in the following sentences:

- (10) BROTHER *L-E-G* PAINFUL[M:continuative], SPOIL[id:'as a result'] CAR ACCIDENT.

My brother's leg has pained him for a long time, as a result of a car accident.

- (11) SUPPOSE[+] TIRED[+], FOR\_SURE SISTER SILLY[M:continuative].

If my sister becomes very tired, she will surely act silly for a long time.

#### *The Tremolo Modulation for Incessant Aspect*

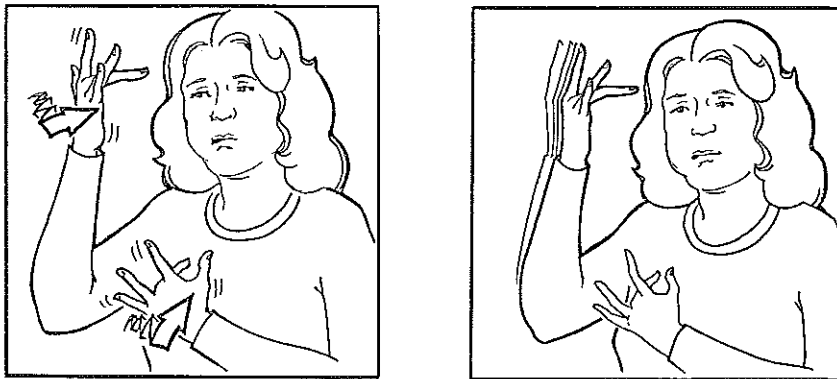
A modulatory movement with a totally different form from the elliptical also has the interpretation of duration throughout a span of time. This modulation is used when a trait or quality recurs so frequently through a span of time that it seems interminable. The modulation thus refers to the rapid recurrence of a characteristic, focusing on its apparent incessant duration. We have named it the tremolo modulation because of the general characteristics of the form of its movement: it is a tiny, tense, uneven movement, made as rapidly as possible and iterated several times in citation-form signing. Figure 11.9 illustrates the tremolo modulation on SICK.<sup>12</sup>

The tremolo modulation is used in sentences such as the following:

- (12) POOR[+] SISTER, SICK[M:incessant], NEVER STOP.

My poor sister gets sick incessantly; it never stops.

Figure 11.9 Two representations of SICK after undergoing modulation meaning 'incessantly recurring.'



SICK[M:incessant aspect]

(13) THICK-PILE[+] R-U-G WHITE[+]; DIRTY[M:incessant].

My deep pile rug is white; it seems to get dirty constantly.

States or qualities existing over a span of time can be continuous or may be subdivided into multiple occurrences; the elliptical and tremolo modulations express this subtle distinction in meaning. Both refer to extended periods of time, the former to an elongated state, the latter to what seems an incessantly recurring state.

*The Marcato Modulation for Frequentative Aspect*

Another modulation that focuses on the subdivision into different occurrences of a state or quality is a modulation for what we call frequentative aspect, meaning 'often occurring.' This modulation indicates multiple occurrences of a trait or quality, not closely spaced in time. To characterize the general form of the modulation for frequentative aspect we use the musical term *marcato*, for a marked steady regular beat. In citation signing with the sign SICK, for example, the modulation has a tense movement, well-marked initial and final positions, and a regular beat of four to six reduplications (see figure 11.10).

The marcato modulation occurs in sentences like (14):

(14) SUMMER, RAIN FROM-TIME-TO-TIME, SPOIL[id:'as a result'] SWIM, FRUSTRATED[M:frequentative].

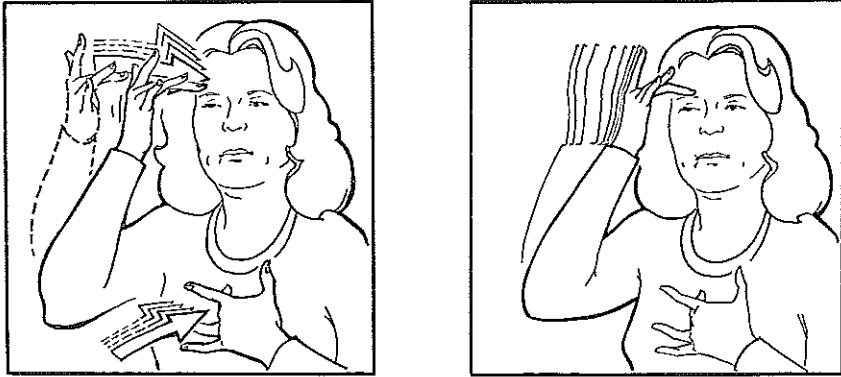
Last summer it rained at intervals; plans for swimming were often frustrated.

*Tense and Lax Modulations for Intensive and Approximative Aspects*

Several changes in manner indicate degree of intensification. One such change applies a form of stress to the sign: an intensive form. At the other end of the scale is a modulation that is minimal and lax in form and conveys the meaning 'sort of.'<sup>13</sup>



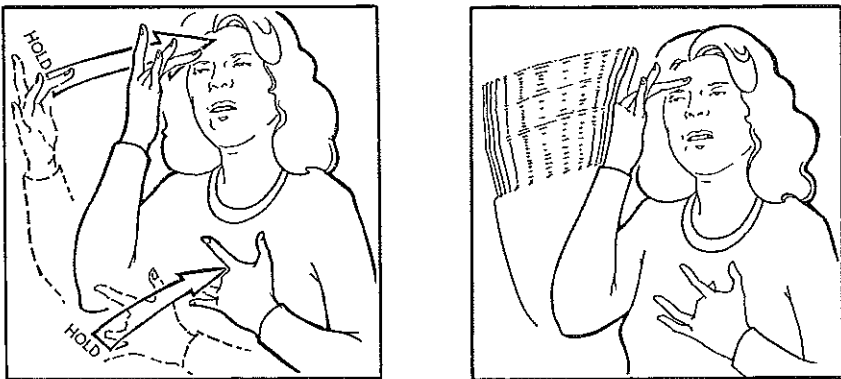
Figure 11.10 Two representations of SICK after undergoing modulation meaning 'often occurring.'



SICK[M: frequentative aspect]

The change in movement for intensive aspect is characterized by tension in the muscles of hand and arm, a long tense hold at the beginning of the sign, a very rapid single performance, and a final hold. Hand-internal movement such as the finger wiggling of DIRTY becomes a rapid springing open of the hand, embedded in the movement. Alternating movement of the two hands sometimes changes to simultaneous movement (as in EMBARRASSED). The intensive form of SICK meaning 'very sick' is made with a long tense initial hold and an extremely rapid single movement of the sign (see figure 11.11).

Figure 11.11 Two representations of SICK after undergoing modulation meaning 'very.'



SICK[M:intensive aspect]

ASL sentences that illustrate the use of the intensive modulatory form:

- (15) HIT[id:'it happened'] F-L-U, HUSBAND; WEEK[M:'all week long'] SICK[M:intensive].

My husband was stricken with the flu; he was very sick all week.

- (16) BABY NONE[+] EAT; HUNGRY[M:intensive].

The baby hasn't eaten; he is very hungry.

Contrasting with the intensive form of such signs is the lax form for approximative aspect, which means 'sort of' or a small degree of a quality or attribute. This modulation is characterized by a lax HC and an extreme reduction in size and duration in each iteration of the sign. The movement of the sign is extremely reduced and minimal; for instance, the uninflected sign PAINFUL, which involves circling motion, still shows repeated circles, though lax, miniscule ones. (See figure 11.12 for illustration of the change on SICK.) The modulation is used in a sentence such as (17):

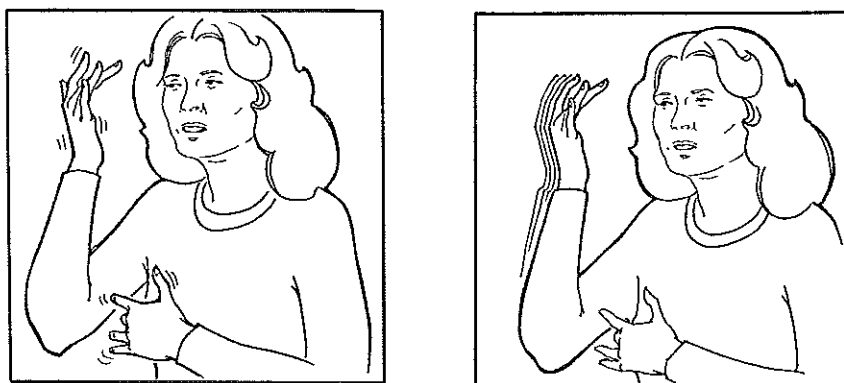
- (17) HOUSE, JOHN SAD[M:approximative] HAVE-TO[+] GIVE-UP.

John is rather sad at being obliged to give up his house.

#### *The Accelerando Modulation for Resultative Aspect*

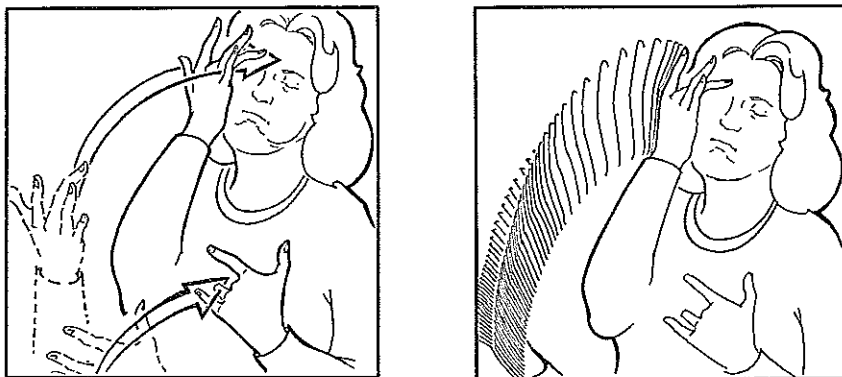
It is this modulated form that was actually used by several signers in the story of the fisherman whose face became red in the wind. Although we did not notice the changes in the form of RED at that time, reanalysis of the videotapes clearly reveals that the meaning 'became

Figure 11.12 Two representations of SICK after undergoing modulation meaning 'sort of.'



SICK[M:approximative]

Figure 11.13 Two representations of SICK after undergoing modulation meaning 'become fully.'



SICK[M:resultative aspect]

red' was often coded in the sign itself. In citation form RED is made with a soft repeated motion, a downward brushing made twice. Under the modulation that changes the meaning to 'became red' the sign no longer repeats; it has a tense motion, which starts slowly and with restraint and accelerates to a long final hold; thus we call it the *accelerando* modulation.

When SICK undergoes the *accelerando* modulation it is made with a single elongated tense movement that begins as a slow heavy movement toward the forehead and then accelerates to a long final hold (see figure 11.13). The change in rate is characteristic of this modulated form: a restrained, slow beginning and rapid end.

The meaning of the modulation is not 'starting to get or have a quality' but rather 'resulting in a complete change of state or quality'; hence we call this the modulation for resultative aspect. The meaning focuses on the completion of a change of state—from healthy to sick, from normal to frustrated, and so forth.

The *accelerando* modulation for resultative aspect is used in sentences like the following:

- (18) BROTHER GET-IN CAR, ENGINE-START[+] NONE[+], QUIET[+]; (HE) CROSS[M:resultative].

My brother got into his car and tried to start the motor, but nothing happened. He became really angry.

- (19) SISTER WORK[+], DOOR-OPEN[+]; FRIGHTENED[M:resultative].

My sister was engrossed in her work; the door opened (by itself); she became really frightened.

- (20) MAN OLD FISH[+]; WIND[+], (HIS) FACE RED[M:resultative].

The old man was fishing; his face became red in the wind.

Table 11.1 Adjectival predicates and aspectual modulations.

Signs	<i>Circular</i>	<i>Thrust</i>	<i>Elliptical</i>	<i>Tremolo</i>	<i>Marcato</i>	<i>Tense</i>	<i>Lax</i>	<i>Accelerando</i>
AFRAID		+		+	+	+	+	+
AMBITIOUS ('motivated')	+		+	+	+	+	+	+
ANGRY	+	+		+	+	+	+	+
AWKWARD ('clumsy')	+	+		+		+	+	+
BIG-HEADED ('conceited')	+	+	+	+	+	+	+	+
CAREFUL	+		+	+	+	+	+	+
CARELESS	+	+		+	+	+	+	+
COLD ('feel cold')		+	+	+	+	+	+	+
CRAZY-ABOUT	+	+		+	+?	+	+	+
CROSS	+	+	+	+	+	+	+	+
ROUGH ('cruel')	+		+	+	+	+	+	+
DIFFERENT ('changeable')	+		+	+	+	+	+	+
DIRTY	+	+		+	+	+	+	+
DIZZY	+	+	+	+	+	+	+	+
DOUBTFUL ('indecisive')	+	+	+	+	+	+	+	+
EGOTISTIC	+			+	+	+	+	+
EMBARRASSED	+	+		+	+	+	+	+
EXCITED	+	+		+		+	+	+
FRUSTRATED	+	+	+	+	+	+	+	+
GUILTY	+	+	+	+	+	+	+	+
HATEFUL ('disdainful')	+	+				+		+?
LAZY		+			+	+	+	+
MISCHIEVOUS	+	+	+	+	+	+	+	+?
NOISY	+	+	+	+	+	+	+	+
PAINFUL (vulnerable to pain')	+	+	+	+	+	+	+	+
QUIET	+		+	+?	+	+	+	+
SAD		+			+	+	+	+
SCARED	+	+	+	+	+	+	+	+
SHY ('ashamed')		+			+	+	+	+
SICK	+	+	+	+	+	+	+	+
SILLY	+	+	+	+	+?	+	+	+
SLEEPY	+	+	+	+?	+	+	+	+
SORRY	+	+	+	+		+	+	+?
SUBMISSIVE (accept criticism')	+		+	+	+	+	+	+
TIPSY	+	+	+	+	+	+	+	+
WORRIED	+	+	+	+	+	+	+	+
WRONG ('mistaken')	+	+		+?	+	+	+	+

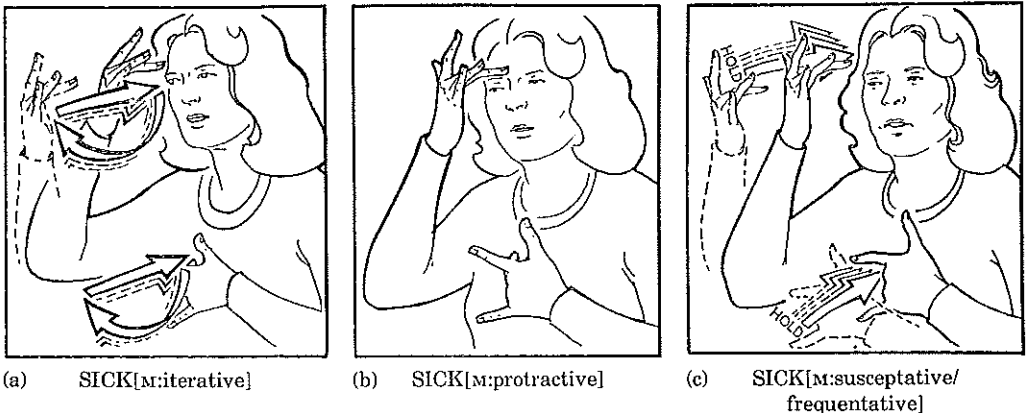
Table 11.1 presents a set of adjectival predicate signs that undergo the modulations described above.<sup>14</sup>

*Other Modulations for Aspect*

The aspectual modulations described thus far are only eight of the modulatory changes that can occur on adjectival predicates. Numerous other changes occur regularly on such signs, with regular changes in meaning. A modulatory form for *iterative aspect* adds the meaning of occurrence 'over and over again' (as in 'gets sick over and over again'); this is a reduplicated form, characterized by a tense performance of the movement of the sign and then a slow return to the onset of the sign (see figure 11.14a). Another modulatory form, for what we call *protractive aspect*, adds the meaning of duration in time, an uninterrupted state ('be sick uninterruptedly'). This modulation involves no movement at all; the sign remains in place at the target location, with a long tense hold (see figure 11.14b).

Not only are there numerous modulations for particular aspectual distinctions but the modulations themselves can combine in various ways. For example, the thrust modulation meaning 'susceptible to' and the marcato modulation meaning 'often occurring' can be combined into a single *susceptative/frequentative* modulation that has the characteristics of both: a brief thrustlike movement reduplicated with a marked steady beat of about four thrusts. The combined form is shown on SICK in figure 11.14c; the meaning of the modulated sign is 'falls sick frequently' or 'is frequently susceptible to illness,' as in the following sentence:

Figure 11.14 Three additional aspectual modulations on SICK.



- (21) BROTHER LAST-YEAR[+] HAPPEN APPEAR[+] SICK  
[M:susceptative/frequentative].

Last year my brother was often struck down with illness.

The modulation might be used when one repeatedly gets into a situation where the state can readily and easily apply.

Other modulations for aspect in ASL combine just as readily to create further distinctions of meaning.<sup>15</sup>

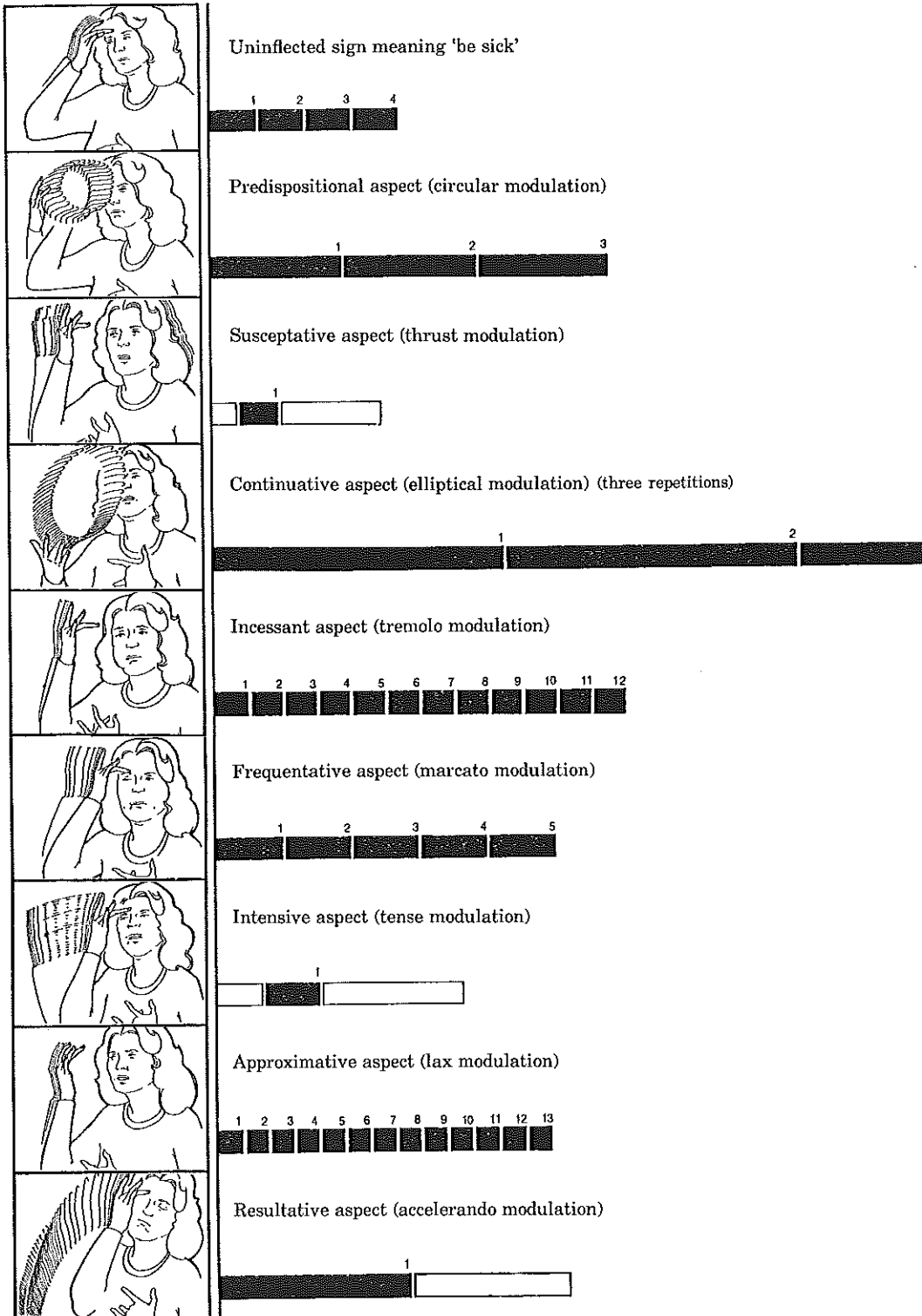
### Systematic Features of Modulations for Aspect

We have described eleven modulations, each of which has a consistent effect on the meaning and form of an underlying sign. What is the nature of the changes in form that occur in these modulations? Note that they do not involve substitutions or additions of HC or PA primes nor of most of the MOV components we posited in chapter 2. Several involve reduplication of the core of movement. Different rates of movement may be superimposed on the movement of the sign (for instance, fast or slow), and the rate throughout the movement may be even or uneven. Dimensions like tenseness or laxness of the muscles may be reflected in the movement change. There may be pauses between cycles or continuous movement between cycles. Dynamic qualities such as these (rate and evenness of movement, tension, pausing), superimposed on the movement of signs, characterize the changes that occur in modulations for aspect.

The illustrations and time lines in figure 11.15 show some of the temporal characteristics of eight of the modulations on the basic sign SICK—the rate, duration, and tempo of movement, the duration of initial or final holds, and the number of repetitions. Note the slow movement at the beginning of the *accelerando* modulation and the fast movement in the *tense* modulation, the unevenness of tempo in the *elliptical* and *accelerando* modulations, the brief rapid repetitions of the *tremolo* and *lax* modulations. (Not all dynamic characteristics of movement are shown in the illustration: for instance, tension of the muscles, accentuation, and evenness of attack are not represented.)

The properties of modulations appear to be different in kind from the properties of the movement components of lexical items. When we describe the movement components distinguishing lexical items of the language, we use terms like *wrist rotation*, *nodding*, *contact*, *brushing*, *wiggling*, *joining*, and *grasping* (see chapter 2). When we consider the overall visual impression of the different modulatory processes, we use global terms such as the *thrust*, the *marcato*, the *accelerando*. But when we describe the changes in movement imposed by these modulations on lexical signs, the terms we use are very different. Dynamic qualities and manners of movement characterize the modulatory pro-

Figure 11.15 The sign SICK under eight aspectual modulations.



cesses for temporal aspect, focus, and degree: changes in rate, in tension, in acceleration, in length, in number of cycles, and so forth. In spoken languages the lexical items and the inflectional processes draw from the same phonemic inventory; in American Sign Language they appear not to. Thus, we must again raise the question addressed by this chapter: what evidence is there that these are other than optional expressive suprasegmental nuances?<sup>16</sup>

The modulatory forms might be global unitary wholes, each uniquely different from the other. If, however, the modulatory forms themselves share featural properties, this would suggest some underlying systematic relationships within the language. Is the form exhibited by the modulations unique in each case? Or do these different modulatory forms constitute some sort of combinatorial system, the individual modulations differing from one another on only a limited number of dimensions?

Similarities among the properties of different modulations suggest that they need not be analyzed as global unitary wholes. A proposal for a set of binary features that might account for some of the differences between the modulatory forms discussed here is presented in table 11.2, as a first approximation. The features proposed are as follows: *Reduplicated*: presence versus absence of cyclic reduplication. *Even*: evenness versus unevenness of tempo throughout a cycle.

Table 11.2 Suggested features for aspectual modulations.

	<i>Reduplicated</i>	<i>Even</i>	<i>Tense</i>	<i>End-marked</i>	<i>Fast</i>	<i>Elongated</i>
Predispositional	+	+	-	-	+	+
Susceptative	-	+	-	+	+	-
Continuative	+	-	+	-	-	+
Incessant	+	-	+	+	+	-
Frequentative	+	+	+	+	+	+
Intensive	-	+	+	+	+	+
Approximative	+	+	-	-	+	-
Resultative	-	-	+	+	-	+
Iterative	+	-	+	+	-	+
Protractive	-		+			-
Susceptative/ Frequentative	+	+	-	+	+	+



*Tense*: presence versus absence of extra tenseness in hand and/or arm muscles.

*End-marked*: presence versus absence of stops or holds at the ends of cycles.

*Fast*: increased versus decreased rate of movement.

*Elongated*: elongated versus shortened size of movement.

When the modulations for aspect are regarded in terms of these featural properties, certain of the modulations appear related in a way that correlates with a clear semantic distinction. Consider the paraphrased meanings of a sample of modulations in the following list:

- (1) To *be* characteristically sick (predispositional aspect).
- (2) To *get* sick easily often (susceptative/frequentative aspect).
- (3) To *be* sick for a long time (continuative aspect).
- (4) To *get* sick over and over again (iterative aspect).
- (5) To *be* sick for an uninterrupted period of time (protractive aspect).
- (6) To *get* sick incessantly (incessant aspect).
- (7) To *be* very sick (intensive aspect).
- (8) To *become* fully sick (resultative aspect).

Note that the odd-numbered phrases refer to states ('be sick'), the even-numbered ones to *changes* of state ('get sick' or 'become sick'). Thus, there seems to be one collection of modulatory forms that refer to the duration of *states* and another of forms that refer to the occurrence (or recurrence) of *changes in state*.

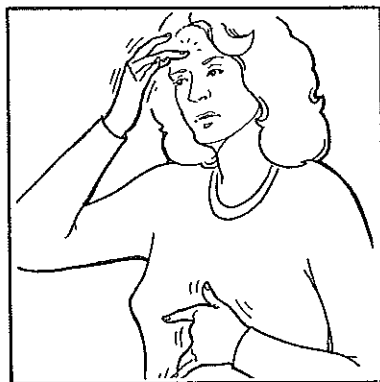
In a crucial insight, Supalla and Newport (personal communication) suggested that the distinction between durative state and change of state—that is, the distinction between 'being sick' and 'getting sick'—might correlate with a difference in manner of movement. Furthermore, Supalla provided an essential missing link in the paradigm, which permitted a reduction to two parallel sets of forms.

What was missing from the set of modulations we had studied was a simple inchoative form, corresponding to the English *get sick*. That form occurs in sentences equivalent to *Yesterday at noon John took sick*. The form meaning 'to get sick' is made with a straight movement to the forehead and a hold at the offset. The forms meaning 'sick' and 'get sick' are shown in figure 11.16.

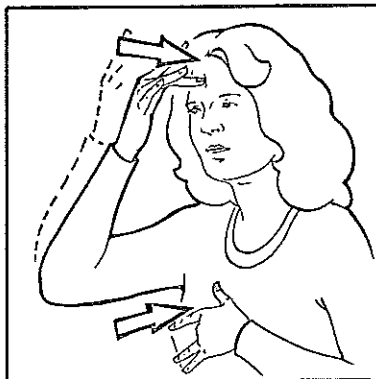
With this piece of the puzzle in place, a simpler paradigm emerges. We can now consider as parallel forms the modulations that apply to states, such as SICK, and those that apply to changes of state, such as the form meaning 'get sick.' These eight modulatory forms now can be seen to represent four pairs of semantic changes on adjectival predicates (see table 11.3).

As table 11.3 illustrates, the modulation for predispositional aspect

Figure 11.16 Two forms of the sign SICK.



(a) 'be sick'



(b) 'get sick'

is semantically parallel to the modulation for susceptative/frequentative aspect; both refer to some state or change of state regularly occurring or habitually occurring, over time. On transitory states the meaning is something like 'tends to be sick' or 'sickly by nature.' On changes of state the meaning shifts to 'frequently susceptible to sickness.' The distinction is a subtle one not reflected in the English *sickly*, which could refer to either one.<sup>17</sup>

The continuative and iterative modulations can similarly be considered parallel. The focus of meaning for both is on extended periods of time: on transitory states the meaning is roughly 'to be sick for a long time'; on changes of state the meaning shifts to 'to get sick again and again.'

Similarly again, the modulation for protractive and incessant aspects can be considered semantically parallel; these too focus on occurrence over an extended period of time, but they reflect the density of the occurrence or occurrences. On transitory states the meaning is something like 'to be sick uninterruptedly' or 'to have one long bout of illness.' On changes of state the meaning expressed is more like 'to get sick so frequently that it seems ceaseless.'<sup>18</sup>

Finally, the intensive and resultative aspects also can be considered parallel forms; the focus of meaning for both is on intensity of the state. On transitory states the intensive corresponds to 'very sick'; on changes of state the resultative focuses on the completed change of state, meaning 'to become (fully) sick.'

The pairs of parallel modulations share formational as well as semantic features. In two cases, the two modulations in a semantically related pair are *minimally* different in form. The predispositional and the susceptative/frequentative aspects focusing on persistence or regular recurrence of states, are both even in rate, elongated, redupli-

Table 11.3 Aspectual modulations related by semantic function.

Pairs of modulations	<i>Reduplicated</i>	<i>Even</i>	<i>Tense</i>	<i>End-Marked</i>	<i>Fast</i>	<i>Elongated</i>	
Predispositional 'be characteristically sick'	+	+	-	-	+	+	Transitory State
Susceptative/Frequentative 'easily get sick often'	+	+	-	+	+	+	Change to State
Continuative 'be sick for a long time'	+	-	+	-	-	+	Transitory State
Iterative 'keep on getting sick again and again'	+	-	+	+	-	+	Change to State
Protractive <sup>a</sup> 'be sick uninterruptedly'	-		+			-	Transitory State
Incessant 'seem to get sick incessantly'	+	-	+	+	+	-	Change to State
Intensive 'be very sick'	-	+	+	+	+	+	Transitory State
Resultative 'get (fully) sick'	-	-	+	+	-	+	Change to State

a. Protractive aspect is made as a long, tense hold in place. Thus some features do not apply.

cated, lax, and fast; they differ only in end-marking. This is a feature that also differentiates the form of SICK (the state) from the form meaning 'get sick' (entry into that state). The continuative and the iterative, focusing on prolonged occurrence or recurrence of states similarly differ from one another only in end-marking. They are unlike the first pair in being uneven and having a slow portion. The intensive and resultative, focusing on the intensity of the state, differ only in two features: unlike the latter, the intensive is even and fast. The protractive and incessant show less featural similarity. All four modulations on changes of state are end-marked, retaining the end-markedness of the simpler underlying form meaning 'get sick.' There appears

to be a fairly consistent difference in the manner of movement, correlating with certain semantic distinctions.

Thus, the multitude of forms exhibited by these modulations—forms that we originally characterized globally as circular, elliptical, tremolo, thrust, and so forth—may differ from one another on only a limited number of dimensions. Some modulatory forms are reduplicated, some are not; modulatory forms differ on dimensions of dynamic qualities such as rate of movement, tension, evenness of tempo, elongation of movement. Furthermore, these differences in dimensions correlate with a network of basic semantic distinctions. This evidence suggests that within the language this set of modulations shows underlying systematic relationships characteristic of grammatical processes.

### Grammatical Processes and Iconicity

American Sign Language has regular morphological operations for marking subtle distinctions in aspectual meaning: regular inflectional ways of distinguishing temporary from permanent characteristics, of distinguishing states from entries into states, of distinguishing a state from a readiness for that state to occur, of distinguishing enduring from recurring states, and so forth. These distinctions are made by modulatory forms that are not incongruent with their meanings: permanent or enduring states are characterized by continuous movements, recurring states by repeated end-marked movements, intensification of a state or quality by tense rapid movement, and so forth.

These grammatical processes operate with great regularity on the lexical items of the language, their shape determined by the sign's formational parameters without regard for its iconicity. The sign QUIET, for example, has been described as hands moving gently downward in a peaceful gesture; to sign that someone is characteristically quiet, or taciturn, the sign is made with a rapid repeated circling motion, obliterating the peaceful quality of the uninflected sign. The sign SLEEPY is a soft repeated closing of the hand near the face, representing the drooping of the eyelids in a sleepy state; under the same modulation for predispositional aspect ('characteristically sleepy') the movement is again a rapid circular motion and decidedly brisk rather than sleepy. The sign ANGRY is made with tense hands moving up the chest and outward, as if giving vent to extreme expression of emotion. Under the modulation for susceptive aspect, the movement is reduced to a tiny rapid thrust with lax hands; there is no hint of anger in the modulated form although it means 'ready to flare up in an instant.'

Finally, consider the sign SLOW: it is made in uninflected form with one hand moving along the back of the other hand. One way of conveying 'very slow' is not by making the movement more slowly (although

this occurs in poetic renditions of signing; see chapter 14). Rather, an intensive form meaning 'very slow' is made with the tense onset and offset and *rapid* movement characteristic of stressed signs. The modulated form reflects not simply diminished iconicity; the form is actually incongruent with its meaning.

When a sign undergoes morphological operations, then, the iconicity of the sign is sometimes submerged—though submerged by operations that themselves may be in some respects representational. At the level of its regular grammatical operations the language exhibits the same two faces of iconicity and abstractness it exhibits at the lexical level.

Aspectual modulations on adjectival predicates in ASL represent a rich set of grammatical processes marking subtle distinctions in meaning. The modulations are regular formational variations associated with specific changes in meaning; they are not optional expressive additions but are required and consistently generated in particular linguistic contexts; the modulatory forms share featural properties that suggest an underlying systematic formational system, and this system correlates with certain semantic distinctions; the modulatory processes operate without regard for the iconic properties of the underlying lexical forms.

Unlike the form of most inflections in spoken language, the form of these inflections in ASL is superimposed changes in the dynamic qualities of the lexical items. It appears that the formational properties of these modulations may be different in kind from the formational properties of lexical items.

We shall show in chapter 12 that the modulations described here constitute only a small set of the regular morphological variations provided within the language and illustrate only some of the dimensions employed in inflectional forms. They are characteristic of inflectional processes in ASL in that they make crucial use of dimensions of movement in space—a form for coding abstract grammatical concepts that is unique to a visual-gestural language.