

Movement Notation Systems

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In contrast to notation systems for writing vocal gestures (speech), movement writing systems provide the means to write bodily actions whose modality is visual-kinesthetic rather than vocal. Like the history of writing systems for speech, however, the history of movement writing reveals a tremendous variety of solutions to problems of transcription, and several ways of identifying basic units that form the basis for a script. In contrast to various forms of mnemonic devices, such as word glosses or static pictographic representations of the human body in diagrams or photographs, movement scripts represent a genuine technological breakthrough because they provide the means to become literate in relation to the medium; that is, they provide a means to apperceive, read, write, reconstruct, think and analyze in terms of graphic symbols that represent the movement itself (see Farnell 1994a; Williams and Farnell 1990).

Extant records show that at least 87 movement writing systems have been used in Europe and North America since the fifteenth century. Many were invented to record one specific movement system such as an idiom of dancing or a gestural system, and disappeared from use when the movement system itself changed or disappeared. It is only in the mid twentieth century that generalized systems have emerged that are adaptable to wider needs. The scholarship in this field remains extremely meager and we know virtually nothing of movement writing systems in areas of the world outside of Europe and North America. Hutchinson-Guest (1984) and Key (1977) provide useful discussions and bibliographies of known systems.

Historical Developments in Europe

Historical records show that in fifteenth-century Europe, movement notation systems began to appear as mnemonic devices for social dances. Renaissance dancing masters in the courts of Italy, France and Spain were highly esteemed as purveyors of an elaborate etiquette that involved displays of wealth and power in the form of elegant dress, stately dances, and correct deportment. The earliest known treatises on dance technique (e.g., Ebreo 1463; Cornozano 1465) recorded dances then popular at court. Known as *Basse Dances* (low dances) each dance was composed of different combinations of five basic step patterns, each of which had a name. Transcribing a particular dance sequence was easily accomplished by listing the initial letter of each step. Figure 1. shows an example from a collection of dances written circa 1460, in which the steps are written by placing the appropriate letter under the musical notes. The most widely translated and reprinted book that uses this letter system is *Orchesographie* by Thoinot Arbeau (1588), a pseudonym for one Jehan Tabourot, a Jesuit priest, who, unlike most of his fellow clerics, was in favor of dancing.

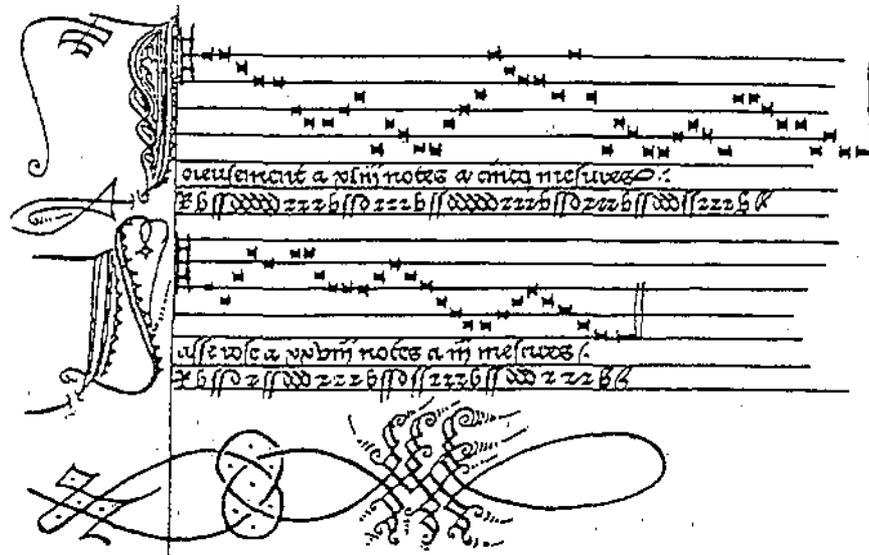


Figure 1. From *The Dance Book of Margaret of Austria* (c. 1460) also known as the Golden Manuscript and the Burgundian Manuscript (Royal Library, Brussels); reprinted, with permission from Hutchinson-Guest 1984: 44. It first belonged to Marie de Bourgogne and later her daughter Margaret of Austria. The steps listed are: *R*, *reverencia*, 'reverence', a bow to start the dance; *b*, *branle*, a swaying step; *s*, *simple*, a step forward followed by closing the feet together; *d*, *double*, three forward steps followed by closing feet together; *r* (looks like a *z*), *represa* 'reprise', a backward step.

This primitive system served its limited mnemonic purpose well at the time, but many essential elements of correct performance were assumed to be common knowledge and so were not recorded. This has left historians of Renaissance court dances unable to reconstruct fully the actions of the arms, head and torso, as well as essential features such as correct gaze, posture, precise choreographic forms and floor patterns. An unknown Catalonian dancing master of the same period provides the earliest known example of using arbitrary but iconically motivated signs to represent movement in these court dances (Figure 2.).

The movement notation found in John Playford's popular *The English Dancing Master* (1651) represents a transitional stage, in that he used some of these letter abbreviations but added graphic signs for repeats, as well as diagrams of basic floor patterns with signs that distinguished male and female dancers. However, the actual sequences of movements were described in words. Many books written about the popular European dances of the eighteenth and nineteenth centuries follow this pattern, showing floor plans and accompanying music, with the steps described briefly in words. They too, however, act primarily as mnemonic devices and do not facilitate accurate reproduction.

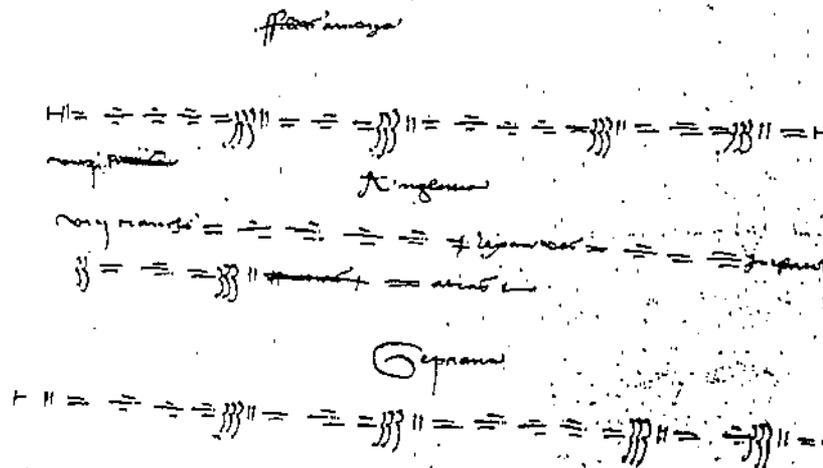


Figure 2. A mid 15th century dance step notation system from Catalonia, Spain. Anonymous mss. Cervera Municipal Archives, Catalonia, Spain; reprinted, with permission from Hutchinson-Guest 1984: 45. The letters normally used to represent dance steps have been replaced with a horizontal stroke that represents forward movement. Two horizontal lines represent two 'simple' steps; three horizontal lines the 'double' step, and |—, the *reverencia*, represents the forward body movement of a bowing action. A vertical stroke represents a step in place; e.g. || for the *branle* step (swaying from side to side equals two steps in place). A stylized z, represents the *reprise*.

As European dance forms changed and more detail was required, other notation systems were invented, such as the Beauchamp-Feuillet system used in France circa 1700. Although invented by Pierre Beauchamps, a famous ballet-master, it was the younger Raoul Auger Feuillet, who first published a book on the subject. King Louis XIV's passion for dancing set a social climate in which a system of notation for dancing could flourish. As dancing was a required social grace at court and among the educated classes, instruction in the art became necessary. The Academie Royale de la Danse was established by the King in 1661, and there followed a period when the ability to read dances using the Beauchamp-Feuillet notation was an expected skill of any educated person in the courts of Europe. Feuillet's books were quickly translated into English and German, and collections of the latest dance compositions by famous teachers were published almost yearly between 1700 and 1722. Indeed, as Addison wrote in *The Tatler* in 1709, "there is nothing so common as to communicate a dance by letter" (cited in Hutchinson-Guest 1984:64).

This brief excursion into movement literacy lasted almost a hundred years but declined along with the demise of the French aristocracy during the French Revolution. The emergent French middle class practiced the simpler *contredanses* (country dances) from England. In contrast, theatrical dance forms, which were basically the same as the court dances in the early eighteenth century, developed into classical ballet. Such dance forms became elaborate and highly skilled, and altogether separate from social dancing. In this milieu, movement literacy

declined because professional theatrical dancers were not members of literate elites. In addition, not all influential teachers were in favor of writing dances (e.g. Jean George Noverre). As a consequence, the Beauchamps-Feuillet notation system was never developed sufficiently to accommodate the new complexities of an enlarged ballet vocabulary, and by the turn of the century the tradition of literacy had been broken. Theatrical dancing reverted to an oral-visual tradition, with disastrous consequences for our knowledge of the historical development of European choreography.

The Beauchamps-Feuillet writing system is based upon a center line that traces the dancer's path across the floor (Figure 3b). Indications for steps are somewhat iconic; a black dot indicates the start of a step, a line traces the direction of its path and an angular line at the end represents the foot. Strokes added to the basic step sign allow for ornamentation such as bending the knee, rising on toe, a springing step or gliding step (Figure 3a). Positions of the feet in relation to each other can be written, along with some arm movements, and there are signs for indicating the taking or releasing of hands. As with the earlier notation systems, focus was upon the intricate footwork, while knowledge of elegant carriage and graceful use of the arms was taken for granted. The Beauchamp-Feuillet system did not distinguish steps (weight bearing) from leg gestures in the air, nor did it accommodate ornamental and pantomimic arm gestures and use of the torso and head. Theatrical dances of the period increasingly involved a large number of dancers moving simultaneously, and so the track system, upon which the Beauchamp-Feuillet system was based, became unworkable (Hutchinson-Guest 1984: 62-66).

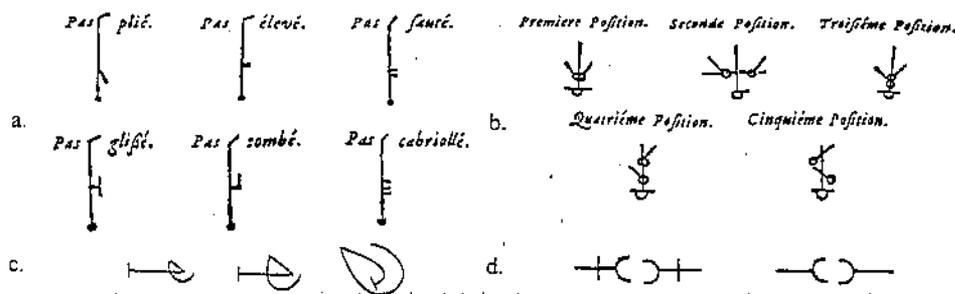


Figure 3a. The Beauchamp-Feuillet notation system for the court dances of Europe. (Feuillet 1700a). Above: (a) Variations in steps, (b) positions of the foot, (c) arm movements, (d) taking and releasing the hands.

The image shows a page of musical notation. At the top, there is a staff of music with a treble clef and a key signature of one sharp (F#). Below the staff, the word "Grave" is written. The main title is "The Pastorall" in a large, elegant script, followed by "by M. Isaac" in a smaller script. The central feature is a large, decorative initial letter "P" formed by musical notation. The letter is filled with intricate musical notes, stems, and ornaments, creating a complex, calligraphic design. The bottom of the page is labeled "1^{re} Couplet...".

Figure 3b. An example of a dance written in the Beuchamp-Feuillet writing system (Feuillet 1700a).

During the nineteenth century, several new dance notation systems emerged, some of which centered on stick-figure representations of the body, others on adaptations of musical notation (e.g. Saint-Leon 1852; Zorn 1887). Most notable in this period, perhaps, is the system invented by Vladimir Ivanovitch Stepanov (1892). Although a dancer of the Maryinsky Theater in St. Petersburg, Stepanov also studied anatomy and anthropology at the University of St. Petersburg, and was sent to Paris to further his studies. Alexander Gorsky refined the system after Stepanov's untimely death in 1896, but it was Gorsky's assistant Nikolai Grigorevich Sergeyev who put it to work. He and his assistants recorded a large number of ballets and used the notation to reconstruct the latest choreography on new companies such as the Diaghilev Ballets Russes, the Latvian National Theater, the Paris Opera, and London's Vic-Wells (now the Royal Ballet).

Stepanov was the first to base a notation system on an understanding of the anatomical structure of the human body. Musical notes form the basic signs (an idea used previously by Bernard Klemm in 1855) and the time value of a note is the same as in music. A modified musical staff provides sections on which to indicate movements of the legs, arms, body and head (Figure 4). Square headed music notes indicate steps in contact with the ground whereas round headed notes indicate leg gestures. Note stems that go upward represent the left leg or arm; note stems going down the right leg or arm. Additional notations on the stem indicate movements involving flexion, extension, adduction, abduction, twisting, turns and circular movements. As these terms indicate, Stepanov's taxonomy of the body and classification of movement is clearly based on his anatomical training. An innovation was to indicate the degree of turn with numbers distributed around a circle, and floor plans were also included.

Despite that fact that Stepanov's system was officially tested and approved by his Russian superiors before being put to practical use, by 1920 it was moribund. Reasons for its demise are complex, but certainly involve the personalities and politics of the day, as well as its technical shortcomings (see discussion in Hutchinson-Guest 1984: 74; Wiley 1978: xii-xvii). An important factor, however, and one which continues today in European and American professional dance sub-cultures, was skepticism towards, or complete rejection of, the very idea of notation by principal figures. There was (and is) an overwhelming focus on the continual invention of new choreography, and so ballet-masters' desired to create their own versions of the classics according to the skills and strengths of new dancers, rather than copy their predecessors. Thus classic works that carried the same name frequently contained entirely new choreography. For example, Marius Petipa, a leading 19th century Russian choreographer, was, "completely convinced (pray God that I may be wrong) that worthy ballet masters will not use [Stepanov's] method of notation" (Petipa 1892 cited in Wiley 1978: xiii). One can only wonder whether Petipa's prayer suggests a faint glimmer of awareness about the long term consequences that such self-serving attitudes would have for the history and subsequent academic status of his art form.

Dancing is not the only context in which the notation of movement has been attempted. A system was developed in 1806 by Gilbert Austin for the notation of gestures and body positions during public speaking, and this was combined with notations for vocalizations. Austin used letter abbreviations that referred to a specific classification of gestural actions (see Figure 5.). Many subsequent studies in non-verbal communication have repeated this type of abbreviation, using check lists of graphic signs or word glosses that represent different positions of head, eyes, lips, mouth, as movement possibilities to be checked off if and when they occur (see examples in Key 1977). It should be noted that these methods tend to focus on position rather than movement, and their aim is usually statistical analysis according to these predetermined units, rather than movement literacy and a score that would allow full reproduction of the flow of movement. In addition, Ray Birdwhistell (1952) invented a movement notation system for use in functional-anatomical descriptions of 'behavior' in an approach to movement research within American cultural anthropology known as "kinesics."

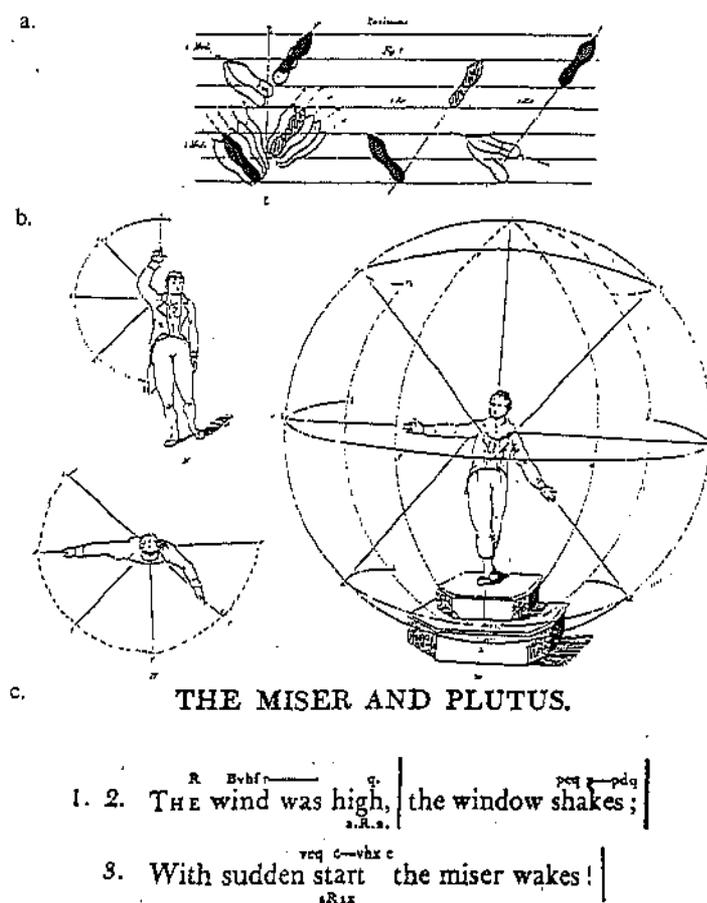


Figure 5. Austin's notation system for gesture and speech in oratory (1806: 363-69). (a) Foot patterns with weight distribution shown by degrees of shading; (b) arm movement was described with coordinates determined by placing the body in an imaginary circle divided into vertical and horizontal planes; (c) letter abbreviations classified hand, arm, head and eye movements: e.g. (letters above the spoken text) R, round look of eyes; B, both hands; v, vertical presentation of palms; h, horizontal arms; f, arms forward in transverse direction; r—, motion right; q, arms atop at oblique position; (letters below the spoken text) a,R,2., advance right foot to second position.

Also of note are systems invented in the past thirty years for writing signed languages. Figure 6 shows a script for American Sign Language (ASL) invented by William Stokoe (1960) and adapted for the notation of Australian Aboriginal sign languages by Adam Kendon (1989). La Mont West Jr. (1960) also invented a notation system for Plains Indian sign language.

Tab symbols

1. Ø zero, the neutral place where the hands move, in contrast with all places below
2. C face or whole head
3. O forehead or brow, upper face
4. U mid-face, the eye and nose region
5. J chin, lower face
6. J cheek, temple, ear, side-face
7. II neck
8. CT trunk, body from shoulders to hips
9. \ upper arm
10. / elbow, forearm
11. Q wrist, arm in supinated position (on its back)
12. D wrist, arm in pronated position (face down)

Dez symbols, some also used as tab

13. A compact hand, flat; may be like 'a', 'a', or 't' of manual alphabet
14. B flat hand
15. S spread hand; fingers and thumb spread like 'S' of manual numeration
16. C curved hand; may be like 'c' or more open
17. E contracted hand; like 'e' or more clawlike
18. F "three-ring" hand; from spread hand, thumb and index finger touch or cross
19. G index hand; like 'g' or sometimes like 'd'; index finger points from fist
20. H index and second finger, side by side, extended
21. I "pinkie" hand; little finger extended from compact hand
22. K like G except that thumb touches middle phalanx of second finger; like 'k' and 'p' of manual alphabet
23. L angle hand; thumb, index finger in right angle, other fingers usually bent into palm
24. J "cock" hand; thumb and first two fingers spread, like '3' of manual numeration
25. O tapered hand; fingers curved and squeezed together over thumb; may be like 'o' of manual alphabet
26. R "warding off" hand; second finger crossed over index finger, like 'r' of manual alphabet

Sig symbols

27. V "victory" hand; index and second fingers extended and spread apart
28. W three-finger hand; thumb and little finger touch, others extended spread
29. X hook hand; index finger bent in hook from fist, thumb tip may touch fingertip
30. Y "horns" hand; thumb and little finger spread out extended from fist; or index finger and little finger extended, parallel
31. U (allocheric variant of Y); second finger bent in from spread hand, thumb may touch fingertip

Sig symbols

32. ^ upward movement
33. v downward movement
34. ^ up-and-down movement
35. > rightward movement
36. < leftward movement
37. < side to side movement
38. T movement toward signer
39. - movement away from signer
40. = to-and-fro movement
41. a supinating rotation (palm up)
42. p pronating rotation (palm down)
43. w twisting movement
44. v nodding or bending action
45. o opening action (final dez configuration shown in brackets)
46. h closing action (final dez configuration shown in brackets)
47. a wiggling action of fingers
48. o circular action
49. h convergent action, approach
50. x contactual action, touch
51. = linking action, grasp
52. + crossing action
53. o entering action
54. + divergent action, separate
55. o interchanging action

TAB (< Tabula) = location orientation represented by
DEZ (< Designator) = handshape
SIG (< Signation) = movement compound notation used to represent signs with two locations

I. BASIC FORMS

Each sign must have one TAB, one DEZ, and one SIG in that order TD^x

Some signs have two handshapes TDD^x

Some signs have two simultaneous movements TD¹ or TDD²

Some signs have two sequential movements TD¹ or TDD²

Some signs have both sequential and simultaneous movements TD¹ etc.

Repeated movement is shown by a dot following the sig symbol TD^x

Alternating movement is shown by a tilde (~) following the sig symbol

II. ORIENTATION

Orientation of the hands to the signing space is shown by a subscript on the DEZ symbol. Orientation symbols look like SIG symbols, but they mean starting position, not movement. TD^s

III. RELATIONSHIPS BETWEEN THE TWO HANDS

In signs involving both hands, symbols are sometimes used to show the positions of the hands as related to each other.

Some signs use the non-dominant hand as the TAB. In these cases the first DEZ symbol represents the non-dominant hand, and the second indicates the dominant.

IV. COMPOUND SIGNS

Signs which require contact at two locations are often notated in compound form. Many of these signs are historically decomposable into two separate meaning components.

Compound symbol II

Examples

V. Miscellaneous leftovers

A few signs require simultaneous contact in two different locations. The two necessary notations are shown in vertical arrangement and are joined together by square brackets.

Diacritical marks are additions to the symbol set that modify in small ways the symbols that are seen as basic.

A dot (·) above a movement symbol means sharp, strong single movement TD^s TD^s to the right of a movement symbol means repetition ...

▲ shows one hand in front of the other; however it can be interpreted in two ways. TD_AD^s

Ø When this TAB appears before signs with two DEZ symbols that the movement applies to both hands.

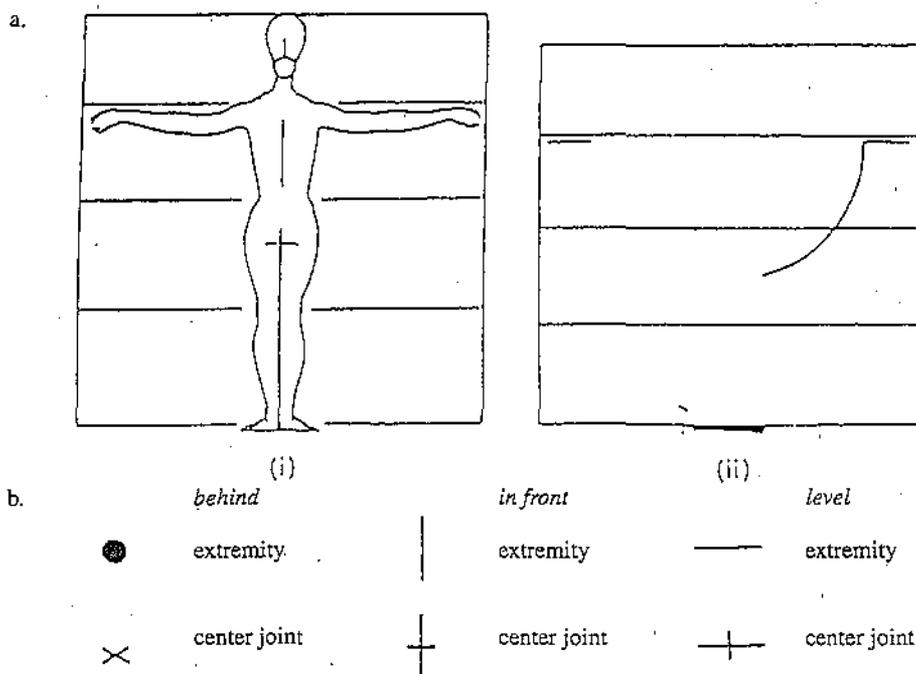
If no Ø is present and the sign has two DEZ symbols, then the first is the base hand and the second is the active hand. Only the active hand moves.

Figure 6. Table of symbols from William Stokoe's writing system for American Sign Language (ASL). (Stokoe, Casterline and C. G. Croneberg 1965: x-xii); below are instructions for use (after Frishberg 1983: 28).

The Emergence of General Movement Scripts

The writing systems mentioned so far have been little used because they were developed to meet the needs of one particular movement system, dance style, or research project. The problem facing investigators has been to develop a script capable of writing all anatomically possible bodily action that would preserve the identity of the movement, make possible accurate reproduction of it, and maintain its semantic content. This entails a concern with recording *action* rather than gross physical movement (see discussions in Best 1974: 193; Williams 1991: 19-20; Farnell 1994b). It is only in the twentieth century that such generalized systems have emerged, and in this they aim to provide the movement equivalent of an International Phonetic Alphabet. Three such systems are currently in use: Labanotation, also known as Kinetography Laban (von Laban 1928); Benesh Choreology (J. and R. Benesh 1956), and Eshkol-Wachman notation (Eshkol and Wachman 1958).

It is important to note that the inventors of these three systems had different aims, came from different cultural backgrounds, and were familiar with different movement systems. These factors influenced the choices they made in solving basic problems of transcription. English ballet dancer Joan Benesh and her husband Rudolph Benesh designed their system at the outset to record ballet, and so the writing system itself underscores a concern with line and the visual results of movement. The Benesh system relies on an iconic visualization of the body placed within a horizontal five line staff (see Figure 7.). In addition to ballet, however, the Benesh system has been expanded and applied to other forms of dancing, as well as to physical therapy.



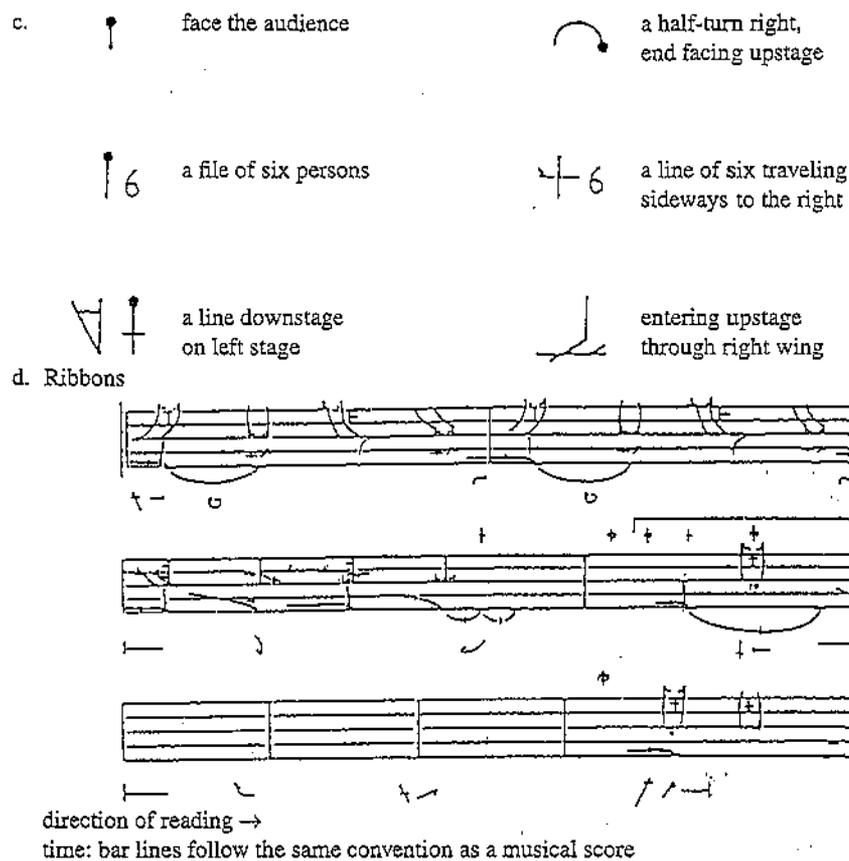


Figure 7. Benesh notation system: (a) body parts and staff: (i) matrix representing the performer; (ii) arm raised sideways (redrawn after J. and R. Benesh 1956: 11); (b) direction symbols for the third dimension; (c) signs under the staff indicate stage direction faced, turning, stage location and direction traveled (redrawn after Hutchinson-Guest 1984: 99,100; (d) A writing example from McGuinness-Scott 1983: 117.

Eshkol-Wachman notation was invented by Israeli modern dance choreographer Noa Eshkol and Israeli architect Abraham Wachmann. Both were interested in the complex articulations of any moving object in space. The system utilizes numbers derived from a planal division of space, together with a few other graphic signs such as arrows, all of which are written on horizontal columns assigned to major divisions of the body (see Figure 8.). The Eshkol-Wachman system has been used in non-human contexts such as computer graphics, architectural design and animal behavior studies, as well as the recording of traditional Israeli dances, contemporary choreography, and Israeli sign language.

e.

(7)	(5)↑1	(6)↓(0)		(7)↑1	(6)↓(0)	
(7)	(1)↑1	(2)↓(0)		(2)↑1	(2)↓(0)	
(7)	(0)		ε	ε		f(0)
(7)	(6)↓ R F	(2)↑(6)	F	(5)↓ R F	(0)↑R(6)	
	(7)↑ ε	↑	(1)↑	↑	(6)↓ ε	↑
v	←	L ε	←	←	L ε	v
	↑	(6)↑	↑	↑	(6)↑	↑
v	L	L I	L ε	v	L	L I
		2	1 .		2	3 .
(7)	↑ (0)	↑ (1)		↓ (0)	↓ (7)	

reading direction →

Figure 8b. An example of writing in Eshkol Wachman notation (redrawn after Hutchinson-guest 1984: 109).

Labanotation was invented by Austro-Hungarian choreographer and dancer Rudolf (von) Laban (1879-1958) who set out to devise a system that could record any human movement. He was intrigued by Greek concerns with mathematics, the movements of planetary spheres, and crystal forms, as well as the Bauhaus movement in visual art and architecture in Germany. He studied human movement in many diverse situations, from manual labor in industrial settings to mime. Current applications include the creation of a historical library of Western theater choreography and the traditional folk dances of Eastern Europe; socio-cultural anthropology; religious studies; Plains Indian sign language, and kinesiology. A related system for analyzing movement dynamics, known in the United States as Effort-Shape, has been applied to child development, dance in education, dance therapy and personality analysis. Labanotation is the system I have chosen to use, and I shall use it here as an illustrative example of how some of the fundamental issues involved in the process of transcribing movement have been solved.

Problems in the Transcription of Human Movement

A comprehensive movement writing system has to resolve several difficult technical issues. Human actions take place in (at least) three dimensions of space and one dimension of time and mobilize many parts of the body simultaneously. An inventory of graphic signs is therefore required to represent, 1) all parts and surfaces of the body; 2) the three dimensional space in which those parts move; 3) time; 4) dynamics, and 5) relationships between body parts, other persons and objects in the form space of the dance or movement event. In addition, orthographic conventions must be established to distinguish simultaneous action from sequential actions through time, and to provide syntactic order. The task is complex, surely, but not insurmountable.

Body

Figure 10 illustrates how Labanotation solves the problem of representing the joints, limbs and surfaces of the body. The graphic signs are arbitrary, but iconically motivated. They thus offer an aid to memory but the number of signs required is greatly reduced in comparison to a system that attempts a pictographic representation of the body. Such specification also provides a system of finite differentiation between body parts. Taxonomies of the body differ across cultures and the degree of flexibility offered by the Laban system, rather than being redundant, accommodates such anthropological concerns.

Vertical columns assigned to major body parts create a basic staff that also provides syntactic order (Figure 9). This basic staff can be adapted, if necessary, to the needs of a specific system. For example, Figure 11. shows the basic Labanotation staff adapted to the needs of writing Plains (Indian) Sign Talk (Farnell 1994a).

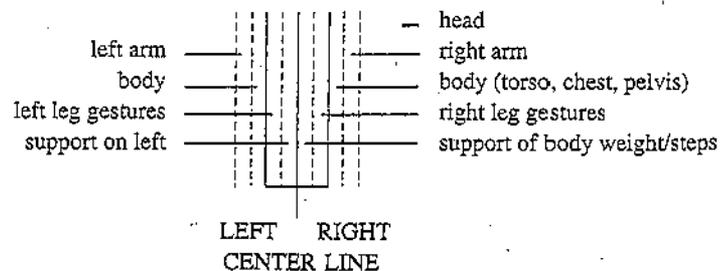
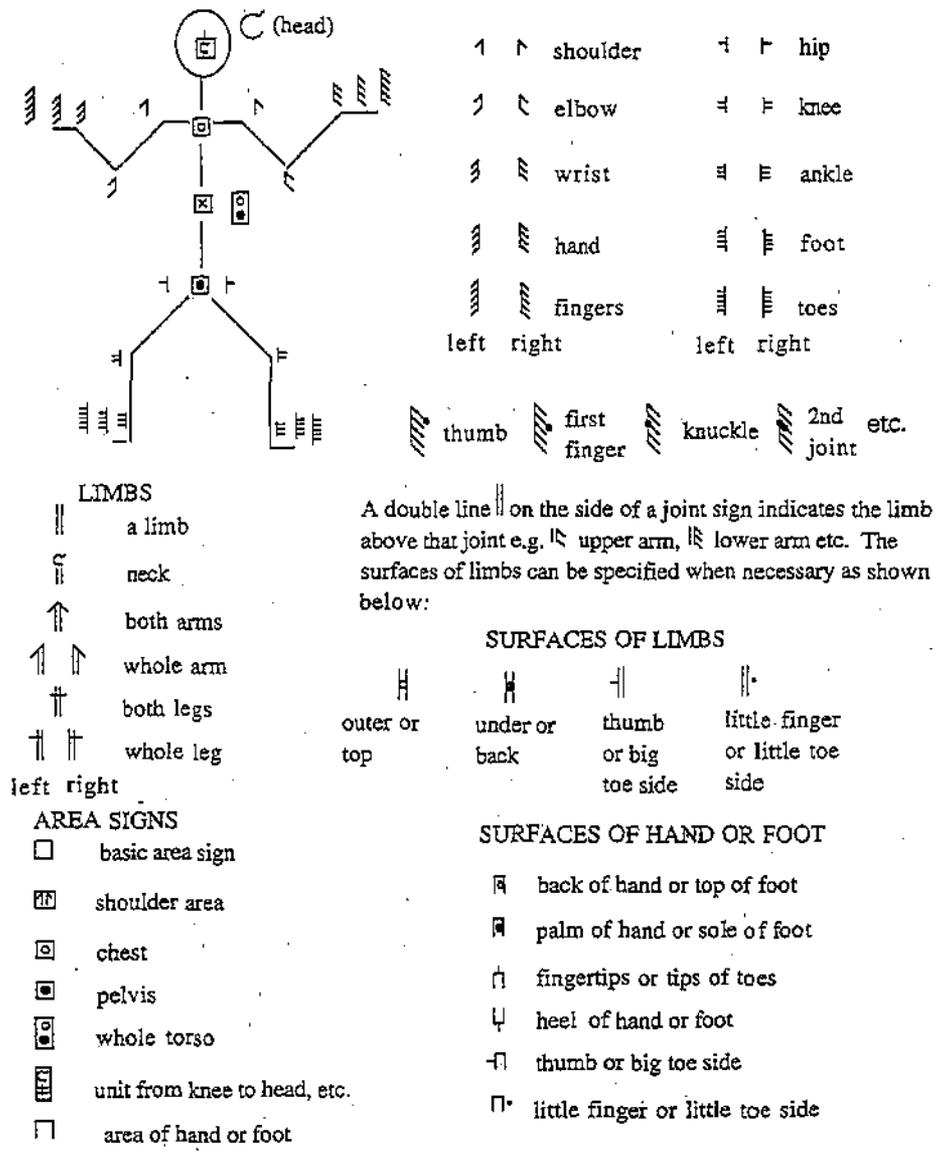


Figure 9. The basic Labanotation staff provides syntactic order for the symbols of the script.



Sides of an area can be specified using a set of minor directional pins ↓ low, ↓ middle ↓ high: e.g. ↓ upper front side of chest, ↓ lower left back diagonal side of pelvis, ↓ front middle area of head, i.e. face. Signs for parts of the face are also built out of these units e.g. ↖ eyes, ↖ right ear, ↖ chin.

Figure 10. Labanotation system: graphic signs for body parts and surfaces (Farnell 1995).

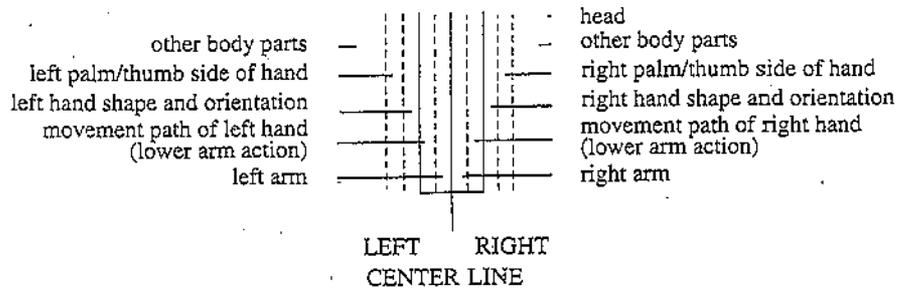


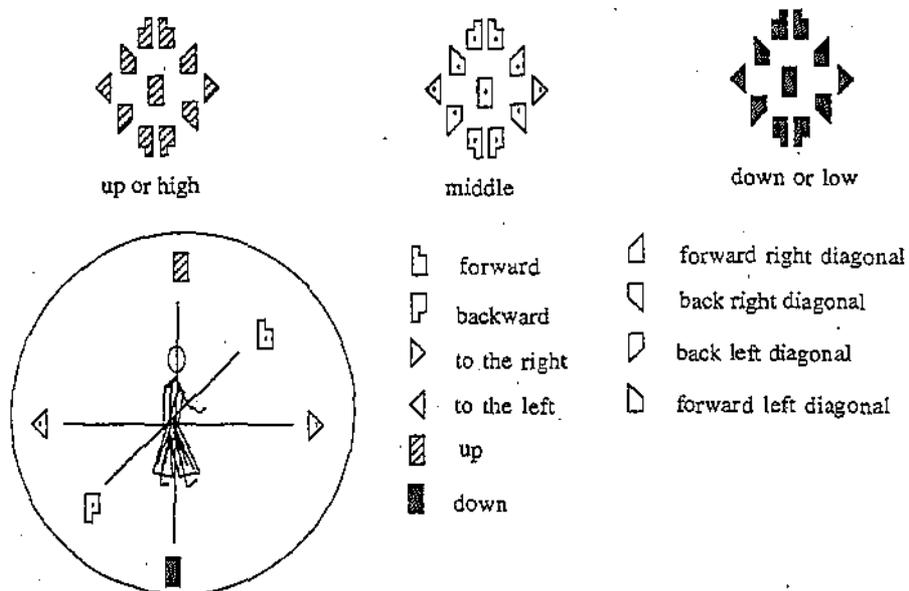
Figure 11. The Labanotation staff adapted for writing (American) Plains Indian Sign Talk.

Space

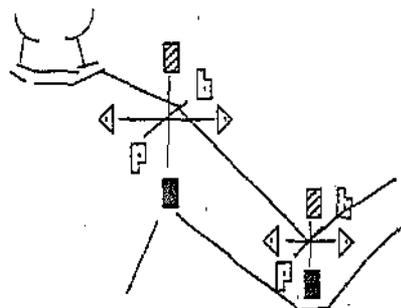
In order to create a finite model of the space in which the body moves, Laban utilized a Euclidean view and conceived of the body as being surrounded by a sphere of space as if inside a balloon. This spherical space is divided along three dimensions by three axes perpendicular to each other (up/down, right/left, front/back) with the body at the center. Each of these major directions and intermediate divisions are assigned a graphic sign as shown in Figure 12. The script utilizes this simple set theory rather than mensurational measuring. Each graphic sign that refers to spatial direction is built out of the basic rectangle . A change of shape denotes the front  versus back  and left  versus right —and in  (high)  (middle)  (low)—a change of shading accommodates the up/down dimension.

This same spatial scheme provides a framework for indicating the direction of pathways for the whole body (as when a person moves from one location to another). Locating a smaller imaginary cross of axes at each joint specifies the direction of individual limbs and smaller body parts. Spatial direction for any body part is judged by the relationship between the distal (far) end of a limb and the proximal end (nearest to torso). For example, if one raises one's right arm out in front of the torso, so that the hand (distal end) is higher than the shoulder (proximal end) then the movement is designated as being in a forward high direction . If the hand is then moved until it is the same level as the shoulder, the movement of the arm would be described as going towards forward middle , and if it continued moving until it was lower than the shoulder it would be forward low . When the arm rests at the side of the torso it is in a "default" position (assumed unless stated otherwise) and is described as , having moved to, or being in, "place low."

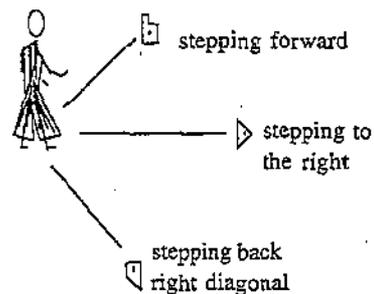
Spatial direction is determined by both the shape of the graphic sign and by different shading.



The three dimensional cross of axes that organizes spatial direction: the body is in the centre of this kinesphere



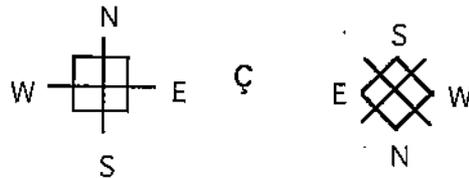
Gestural data: a smaller cross of axes is imagined at the centre of each joint so that direction for each part of a limb can be specified.



Track data: direction symbols for moving the whole body from one place to another. These would be placed in the central support column on the staff.

Figure 12. Labanotation System: graphic signs for specifying spatial direction (Farnell 1995).

As with taxonomies of the body, there are cultural and linguistic variations to spatial orientation as well as to the semantic values attached to spatial directions. Such features can become components of movement texts written with Labanotation through the use of spatial orientation keys. These inform the reader which particular conception of space is in operation, much like the key of C# minor might operate at the start of a musical score:



This key refers to a difference between Euro-American and Assiniboine (Nakota) conceptions of the four cardinal directions. In traditional Assiniboine philosophy, south is considered to be the most salient direction, and north, south, east and west are viewed as four quarters or areas *from* which certain kinds of power come towards a person. This contrasts with the conventional Euro-American perspective in which map-making conventions locate north at the top of a page and each direction is conceived as a straight line pointing out from a central location. Figure 13 shows how this key is used on the first page of my transcription and translation of an Assiniboine storytelling performance with Plains (Indian) Sign Talk ("Long ago, the people who live here now, did not always live here."). PST, like ASL, is a sign language that is fully developed grammatically. It served as a lingua franca across the Plains of North America until English gradually assumed this function early in the twentieth century. PST survives in storytelling and ceremonial contexts in many Plains Indian cultures (see Farnell 1995a, b).

Another important feature of the Laban system is that action is written from the mover's perspective rather than from the standpoint of an observer, and so one records and reads from an agentive perspective.

Time

Scripts of all kinds deal with time by assigning a direction for reading—an axis for the sequential flow of sound or action. Labanotation reads from bottom to top. This was not an arbitrary choice for Laban: he originally devised a script that read from left to right but changed it in order to accommodate the flow of time when multiple body parts are moving simultaneously. The horizontal axis provides for actions that occur simultaneously and actions that occur sequentially are shown in vertical succession. Reading vertically, the left/right symmetry of the body is mirrored in the script and the flow of time moves upwards as one reads. When the timing of actions is controlled by music or other rhythmic divisions, the time axis of the staff can be divided up in a manner similar to standard musical notation. Spatial direction signs normally lengthen vertically to indicate the time taken for performance, but they can also be given a standard length in action sign systems where absolute timing is not important (e.g. sign languages)

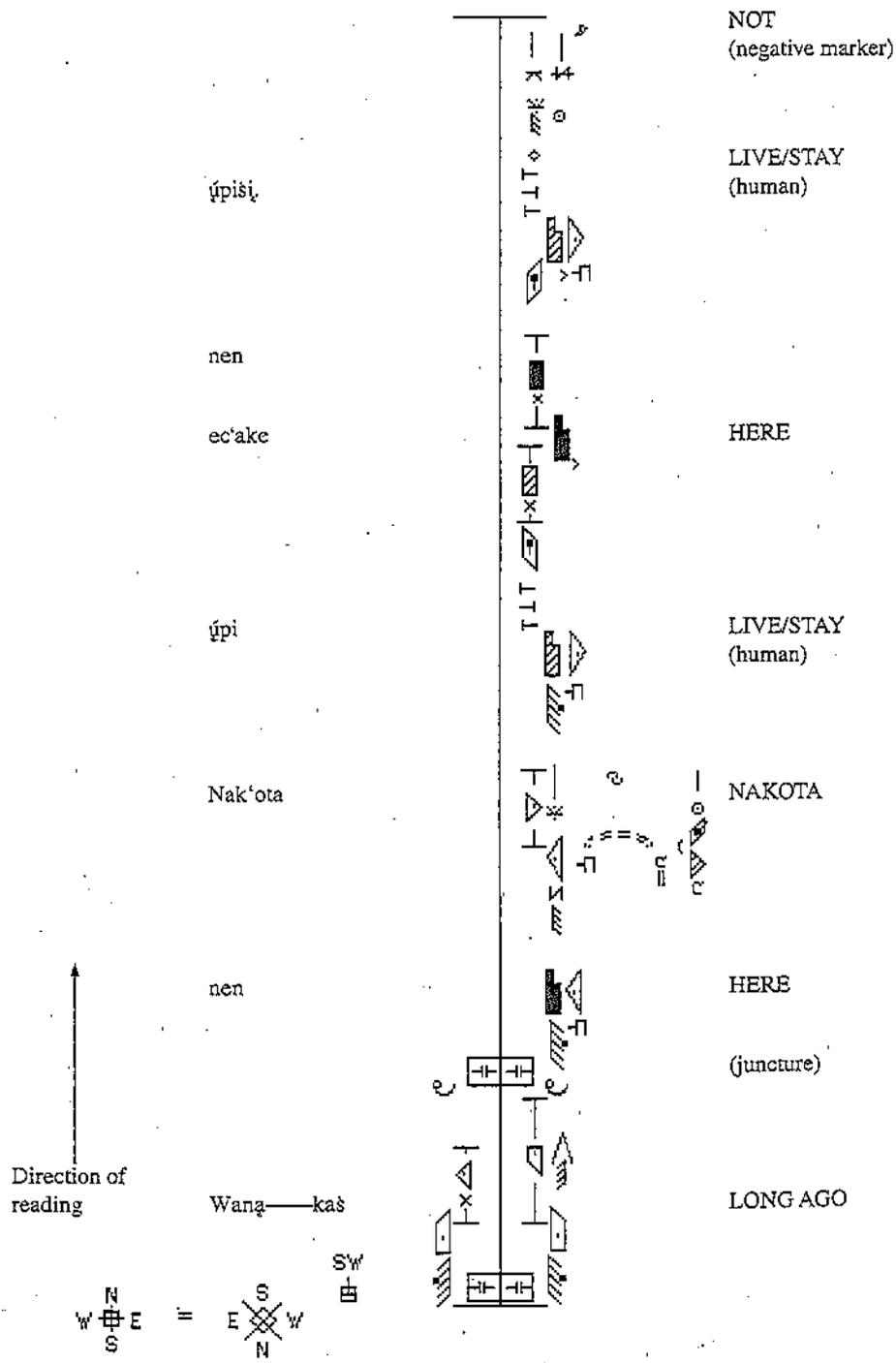


Figure 13. Assiniboine storytelling with Plains Sign Talk and spoken Nakota: page one of the Labanotated score (Farnell 1995).

Additional Dynamics

A body movement always involves some degree of muscular tension or strength; so that dynamics such as acceleration or deceleration, the impetus or initial point for the action, accents, vibration and phrasing may also be added to the description.

Relationships

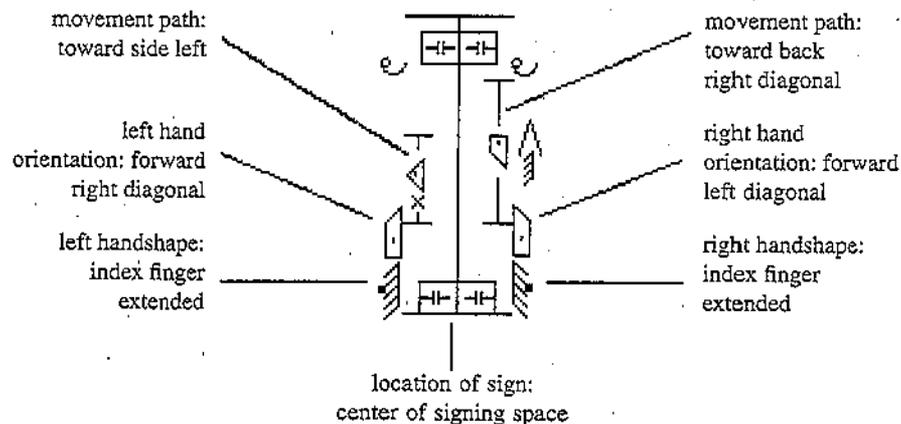
Relationships between body parts, between the person acting and objects or other people are important components of social action and can be described

with a series of relationship signs such as ∇ 'moving towards'; \wedge 'moving away from'; \smile 'addressing' something or someone; \frown 'touching'; \sim 'passing near to'; \times 'grasping' (Figure 14).

Reading the Action

A detailed exegesis of the utterance shown in Figure 13 will provide an example of how these parameters are utilized when writing actions with the Laban script. A 'sign' in a sign language such as Plains Sign Talk can be viewed as a combination of four parameters: a) handshape, b) hand orientation, c) location in the sign space, and d) movement(s). In order to read figure 12, note that the center line divides the right side of the body from the the left side, and that the direction of reading is from the bottom of the page upward. The utterance consists of seven signs.

1. "LONG AGO"



Relationships:

	touching; fingers touching		movement toward
	near to		movement away from
	grasping		phrasing bow
	penetrating		passing state: deviation from a path—e.g., deviation place low (down)
	sliding while touching		passing state: movement led by a body part—e.g., fingertips
	passing not touching		inclusion bow—e.g., including upper arm
	addressing		
	supporting		

Minor direction signs and relationships:

					
					
					
e.g. 	directly above		to the left side of but level with		to the left side of but below
	above and to the right of				
	below and diagonally backward				

Pathways

	a straight gestural path e.g., straight forward		vertical circular path to left and right (in lateral plane)
	circular paths, left and right (in horizontal plane)		circular path, specific axis stated—e.g., forward left diagonal high to backward left diagonal low
	vertical circular paths forward and backward (in sagittal plane)		

Figure 14. Labanotation symbols for the designation of relationships between parts of the mover's body, or between people and/or objects; minor directions and relationships; and spatial pathways.

The first sign involves making the same handshape with both hands. The index finger ☞ (e.g. right index finger) points toward the forward left diagonal ↙ . The orientation of the palm does not need to be written because it is in a "default" position, that is, the wrist is not rotated in any way. Both hands are located in the center of the signing space ☐ in front of the torso. The right hand moves along a straight horizontal path — toward the back right diagonal ↘ , while the left hand takes a shorter horizontal path — toward side left ↖ . The length of the movement path sign — indicates timing—the longer the path sign, the more time it takes to perform.

Additional graphic signs add further information. For example, the movement of the right hand involves an important semantic component. The intention is to move the right hand away from the left hand, I contrast, say to a conception of moving the hand into the back right diagonal. Such a difference in the action is not observable, of course, but highlights the difference between writing actions as opposed to merely gross physical movement. This component of the action is

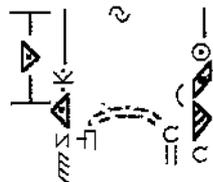
written ↗ : the graphic sign for the left hand ☞ is followed by a sign indicating 'movement away from'. After the movement paths are complete, both hands relax ☪ and return to the center of the signing space. The left hand plays no further role in this utterance.

2. "HERE"



The right hand again takes up the pointed index shape ☞ , this time pointing forward and down ↓ with the thumb side of the hand ☞ facing side left ↖ .

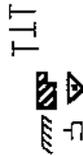
3. "NAKOTA"



The sign for the Nakota nation follows, as the right hand ☞ extends ↙ with the fingers oriented toward (pointing to) side left ↖ . This hand is located so that the thumb side of the hand ☞ takes up a 'passing near to' relationship ↔ with

the neck $\overset{\curvearrowright}{\perp}$ as the hand makes a movement path that slides toward side right \perp . Additional information shows that the hand folds three degrees ∇ (i.e. bends at the knuckles) during the latter half of the movement path, and that the 'passing near to' relationship ceases thereafter \circ (release sign). The head $\overset{\curvearrowright}{\perp}$ is also involved in this performance. The signer tilts his head to side right high \triangleright while turning it slightly ∇ (i.e. $\frac{1}{4}$ turn to the right). The tilt and turn of the head takes place simultaneously, and this is indicated by the small connecting bow \frown . The head then returns to its normal upright position \circ .

4. "LIVE/STAY"



The handshape is again \perp , but is now oriented in the direction forward high \triangleright . The thumb side of the hand \perp is facing side right \triangleright , and the hand makes three minor movements back and forth between right and left \perp .

5. "HERE"



The handshape does not change but the hand turns over ∇ (a half turn to the left) and makes a short path straight up \perp in preparation to come directly down \perp with the finger pointing forward low \blacksquare . The small caret $>$ placed before a direction symbol indicates 'same body part', which in this case refers to the same handshape.

6. "LIVE/STAY"

The fourth sign in the utterance is now repeated, but is preceded by ∇ a half turn to the right, which returns the hand to its previous orientation.

7. "NOT"



The final sign in the utterance marks the negative in Plains Sign Talk. The hand remains in the same space \diamond (a "space hold") while the wrist \curvearrowright folds forward three degrees \searrow . The hand returns to "normal" \odot , that is, it is not entirely relaxed but not held in any special shape. The next action then folds the wrist over backward (outward) \curvearrowleft while the hand \nwarrow extends and spreads (a three dimensional extension). This action is performed with a slight accent or emphasis \nearrow .

This example illustrates how a writing system *creates concepts specific to the medium*. While descriptions of gestures in words are certainly possible, representation in graphic signs that do not relate to the medium under investigation distort that medium and make accurate reproduction or analysis of structure and semantics impossible. In emphasizing this, I am not suggesting that spoken language concepts are not involved. When learning any notation system, of course, spoken language descriptions are necessary as part of the learning process (as illustrated by the exegesis above). The point is, that once the reader is literate, this intermediary function is abandoned and a direct reading of the action occurs.

The parameters of the body, space, time, dynamics and relationships, and the graphic signs that specify them provide a means with which to record "talk" from the body--to record the agentive production of meaning using the semiotics of body movement. A movement script offers much more than a new methodology for inquiry into human movement. The possibility of movement literacy opens up an important theoretical alternative to objectivist talk *about* the body or phenomenological-subjectivist talk *of the feeling of* body movement (see Farnell, 1994; Varela 1993).

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