Kinesics in Nāṭyaśāstra Tradition

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agre saṃskṛtabhāṣayā katipayamaṅgalaślokā asmābhiḥ uccāryante /
    mūkaṃ karoti vācālaṃ paṅguṃ laṅghayate girim /
    yatkṛpā tamahaṃ vande paramānandamādhavam //
tathā ca,
    bahalarajase viśvotpattau bhavāya namo namaḥ /
    prabalatamase tatsaṃhāre harāya namo namaḥ //
    janasukhakṛte sattvodriktau mṛdāya namo namaḥ /
    pramahasi pade nistraiguṇye śivāya namo namaḥ //
    oṃ śāntiḥ śāntiḥ śāntiḥ //
ayi vidvanmatallikāḥ sammānyāḥ sabhāpatayaḥ / candradhavalayaśovibhūṣitāḥ vidvāṃ saḥ viduṣyaḥ anye ca suhṛdāḥ / adya sameṣām bhavatāṃ bhavatīnāṃ ca darśanaṃ kṛtvā momotti mama hṛdayaṃ jarīhṛṣyate ca me mānasam /
adya "bhārataprayojakakalāyām avācikatvam" iti viṣaye yathāmati yathābuddhiṃ vaktu kamo' smi / yadyapi samayaḥ vartate alpīyān, viṣayaś ca vartate mahīyān, tathāpi śrīmatāṃ katipayakṣaṇān jighṛkṣuḥ asmi /

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1. Introduction to "Kinesics "

In the discipline of communication study, it is an accepted fact that the role of nonverbal factors by far more important than verbal factors in the process of verbal communication. As nonverbal factors we can enumerate hand gestures and body movement, interpersonal space, time, posture, eye contact, eye pupil size, odour, touch, closing and possession, etc. whilst language itself and what is called "paralanguage" such as pitches, syllabic stress, voice inflection, cadence, tonality, etc. are referred to as verbal factors.

Ray L.Birdwhistell, American anthropologist, estimates that nonverbal communication by the medium of nonverbal factors comprises as much as 65 % of the overall information. The study of each of these nonverbal factors has been established on its own, say, 'Proxemics' (a coinage by Edward T. Hall) for interpersonal space, 'Oculisics' for eye-contact, 'Pupilometrics' for eye pupil size, 'Olfactometrics' for odour, 'Haptics' for touch or 'Objectics' for possession.

And it is Birdwhistell who coined the term "Kinesics" (from the stem of Greek verb 'kīnẽîn' meaning 'to move') for body movement study. On the model of "Linguistics" which treats the articulations such as phoneme, morpheme and sentence as a synthesis of linguistic articulations, "Kinesics" treats kinesic articulations in gestural behaviour such as kineme, kinemorpheme and complex kinemorphic construction as synthesis of kinesic articulations.

According to the classification by Paul Ekman, American psychologist and psychiatrist, there are five kinesic categories as under.

(1) Emblems: The gestures which substitute for certain words.
        Nodding denotes the affirmation 'Yes,' which depends on
        cultural convention.
(2) Illustrators: The gestures which explain and stress the meaning along with
        language.
        We can convey the concrete size or form by hand illustration.
(3) Affect displays: The facial expressions, the eye-contact, etc. which express our
        emotions and moods.
(4) Regulators: The gestures which regulate the flow of conversation by nodding
        or shaking head denoting consent or disapproval.
(5) Manipulators: The unconscious gestures which expose our own mental state
        such as anxiety, uncomfortableness or confidence by nervous foot
        tapping or hair touching or lip biting.

Among these, 'Affect displays,' in particular facial expressions, are obviously the most communicative in transmission of emotions whilst hand gestures, which have established various 'sign language' systems, are the most communicative in transmission of meanings. Ekman makes close observation and analysis on facial expressions, and abstracts six basic emotions, namely,

(1) Happiness, (2) Sadness, (3) Surprise, (4) Fear, (5) Anger and (6) Disgust.

In order to describe facial expressions in detail, his minute observation is made on three independent movable parts of the face, namely, (1) Forehead part (comprising the forehead and eyebrows), (2) Eye part (comprising eyeballs, eyelids and the root of nose) and (3) Mouth part (comprising cheeks, lips, the nose and the chin). And then, he refers to the characteristics of three parts of each emotion.

The characteristics of 'Happiness'

(displayed only on the lower face and the lower eyelids)

Eye part / Wrinkles appear below the lower eyelids.

　　The lower eyelids may be lifted up but not tense.

　　Crow's feet extend outwards from the outer corners of eyes.

Mouth part / The ends of lips are drawn backwards and slightly upwards.

　　The mouth are sometimes open and sometimes closed.

　　The teeth are sometimes visible and sometimes not visible.

　　Wrinkles run from the nose beyond the ends of lips.

　　Cheeks are lifted up.

The characteristics of 'Sadness'

Forehead part / The inner ends of both eyebrows are raised up.

　　The skin below the eyebrows shows triangular form

　　and its inner apex is up.

Eye part / The inner end of the upper eyelid is lifted up.

Mouth / Both ends of lips are down or the lips tremble.

The characteristics of 'Surprise'

Forehead part / Eyebrows are lifted up, and accordingly get curved and rise.

　　The skin below the eyebrows is extended

　　and horizontal wrinkles appear across the forehead.

Eye part / Eyelids are wide open. The white of the eye is exposed on the iris,

　　or below the iris sometimes.

Mouth part / Mouth opens with the jaw down and with lips and teeth separated.

　　Mouth is, however, neither tense nor extended.

The characteristics of 'Fear'

Forehead part / Both eyebrows are lifted up and drawn each other.

　　Wrinkles appear not across but at the centre of the forehead.

Eye part / The upper eyelids are lifted up.

　　The white of the eye is exposed.

The lower eyelids are very tense.

Mouth part / Mouth is open and lips are slightly tense and drawn backward.

The characteristics of 'Anger'

Forehead part / The eyebrows are pushed down on and drawn each other.

Vertical wrinkles appear between both eyebrows.

The lower eyelids are tense and either lifted up or not.

The upper eyelids are tense and sometimes pushed down on

according to eyebrow movement and sometimes not down.

Eye part / Eyes are wide open and may look like pop eyed eyes.

Mouth part / Either the lips are closed tightly with the end of lips down or level,

or the lips are tense and open squarely.

The nostrils are swollen.

The characteristics of 'Disgust'

(displayed mainly on the lower face and lower eyelids)

Eye part / The lower eyelids are pushed up below which wrinkles appear.

Wrinkles appear at the root of the nose and cheeks are lifted up.

Mouth part / The upper lip is lifted up.

The lower also lifted up or pushed down on and bulged.

Based on this close observation, Ekman invents one unique scientific method to code the facial expressions, "FACS" (Facial Action Coding System). He extracts forty-four 'action units' (AUs) which are independent anatomically and distinguishable visibly, so to say, as facial articulation. Here are some examples of AU table.

No. of AU	FACS Name
01	Inner Brow Raiser
02	Outer Brow Raiser
03	Brow Lowerer
05	Upper Lid Raiser
06	Cheek Raiser
07	Lid Tightener
09	Nose Wrinkler
10	Upper Lip Raiser
12	Lip Corner Puller
14	Dimpler
15	Lip Corner
16	Lower Lip Depressor

17   Chin Raiser
18   Lip Puckerer
20   Lip Stretcher

Choosing and combining proper AUs, we can describe any facial display in a scientific way, and moreover we can composite any delicate facial expression to any degree freely if we apply this coding system to the latest computer graphic technology, as imagined. Here we demonstrate two facial expressions for Sadness and Happiness.

> AU1+AU 15
>> = /Inner Brow Raiser/+/Lip Corner Depressor/
>> = Sadness
> AU6+AU 12
>> = /Cheek Raiser/+/Lip Corner Puller/
>> = Happiness

Regarding its application, Ekman advises that actors should realise the complication of emotion experience in order to convey a certain emotion by histrionics. And we are surprised to find out the same idea, observation, analysis and even application as in "Kinesics" in our modern communication study, even in more elaborated manner, only if we turn our attention to "Kinesics" in the ancient Indian dramaturgy or Nāṭyaśāstra tradition.

2. "Kinesics" in Nāṭyaśāstra Tradition

In the Indian tradition of dramaturgy, we know that the exhaustive consideration on 'abhinaya' started at the very outset. The term 'abhinaya' means histrionics or histrionic representation to convey the content of a play to the audience and there are four kinds of abhinaya, namely, (1) Āṅgika abhinaya (bodily histrionics), (2) Vācika abhinaya (verbal histrionics), (3) Āhārya abhinaya (decorative histrionics) and (4) Sāttvika abhinaya (temperamental or physiological histrionics).

Nandikeśvara's "Abhinayadarpaṇa" (AD 39a-41b) explains as follows.

Āṅgika abhinaya is shown by means of limbs.

Vācika abhinaya constitutes poems, dramas, etc. which are made up of speech.

Āhārya abhinaya consists of the decoration by means of necklaces, bracelets, costume, etc.

Sāttvika abhinaya is represented with temperamental emotions by those who know (the nature of) emotions. Motionlessness, perspiration, horripilation, change of colour, tears and fainting are said the eight temperamental (emotions).

The Sanskrit compound word 'sāttvika-bhāva' translated as 'temperamental emotions' here should be understood as 'emotions manifested and perceived as physiological changes.'

It is obvious that Āṅgika abhinaya, Āhārya abhinaya and Sāttvika abhinaya are included in nonverbal communication except Vācika abhinaya which is literally included in verbal communication. Therefore we understand the ancient Indian dramatists and actors realised fully the importance of "Kinesics" or nonverbal histrionics in the dramatic representation. In passing, the counterpart of Āhārya abhinaya is 'Objectics' and that of Sāttvika abhinaya is 'Manipulators,' a subdivision of "Kinesics." And Āṅgika abhinaya precisely corresponds to "Kinesics" in general.

In contrast with the analysis of modern "Kinesics" according to its function as shown before, Indian "Kinesics" analyses its articulation and function according to the parts of the body.

Bharata, a legendary author of the most authoritative text on Indian Dramaturgy "Nāṭyaśāstra," classifies Āṅgika abhinaya into two divisions of the body, and expounds the distinctive movements, i.e. kinesic articulation in regard to each part as under. The number in parenthesis shows that of distinctive movements or forms.

Primary limbs (Aṅga):
> Head (13), Hand (67), Chest (5), Flanks (5), Hips (5), Feet (13)

Secondary limbs (Upāṅga):
> Eyes, Eyebrows (7), Nose (6), Lips (6), Cheeks (7), the Chin (7)

In his statement about the secondary limbs in "Nāṭyaśāstra," he treats Glances (36), Eyeballs (9) and Eyelids (9) for Eyes, and adds Mouth (6), Facial Colour (4), Neck (9), etc.

At a first glance, theories and classifications referred to in "Nāṭyaśāstra" seem so pedantic and maniac for taxonomy, but what we learn from this classification is how systematically this body articulation is done. Fantastic number has this classification, indeed. We hardly fancy thirteen kinds of head movements, five kinds of flanks movements nor nine kinds of eyeball movements.

In fact, it is well-known that sixty-seven varieties of hand forms construct a marvellous hand gesture system (hasta or mudrā) for Indian dances, which I would like to treat separately for another opportunity.

Here, it is worthy of noticing that most of the parts of the secondary limbs compose the head (i.e. face) of the primary limbs, where take place the facial display as the most communicative in transmission of emotions.

Now let's have a look at the description of a few parts of secondary limbs.

Nine Movements of Eyeballs (NŚ 8.96-105a)
> Oh, best Brahmins, such eyeball movement as Bhramaṇa, Valana, Pātana,
> Calana, Sampraveśana, Vivartana, Samudvṛtta, Niṣkrāma and Prākṛta, these are nine

eyeball movements.

First, listen to the clear and proper definition (of each eyeball movement) with pleasure.

'Bhramaṇa' is called circular revolving of the eyeball inside the eyelids.

'Valana' is triangular movement and 'Pātana' is dropping movement.

'Calana' should be understood as trembling and 'Sampraveśana' as

(eyeball movement of) going into inside (the orbit).

'Vivartana' is sideways movement, and 'Samudvṛtta' is (movement of) raising up (the eyeballs).

'Niṣkrāma' is proclaimed as (eyeball movement of) going out (of the orbit), whilst 'Prākṛta' as natural state (of eyeballs).

Nine Movements of Eyelids (NŚ 8.110b-114a)

Understand the eyelid movement following the eyeball movement.

Unmeṣa (lit. opening), Nimeṣa (lit. shutting), Prasṛta (lit. stretched), Kuñcita (lit. contracted), Sama (lit. even), Vivartita (lit. turned round), Sphurita (lit. throbbing), Pihita (lit. covered) and Vitālita (lit. struck) are the eyelid movements.

When both the eyelids are separated, it is called 'Unmeṣa.'

When united, it would be 'Nimeṣa' and when expanded (i.e. wide open), it would be 'Prasṛta.'

When (eyelids are) contracted, it would be 'Kuñcita,' and when natural, it is called 'Sama.'

When (eyelids are) raised up, it is 'Vivartita,' and when throbbed, 'Sphurita.'

When closed, it is called 'Pihita,' whilst when flapped, 'Vitālita.'

Seven Movements of Eyebrows (NŚ 8.118b-123a)

Understand the eyebrow movement following this (eyelid movement) consequently.

There are seven kinds, i.e. Utkṣepa (lit. raising), Pātana (lit. falling), Bhrukuṭi (lit. knitting), Catura (lit. charming), Kuñcita (lit. bent), Recita (lit. loosening) and Sahaja (lit. natural).

When both the eyebrows are raised simultaneously or one by one, it would be 'Utkṣepa,' and when (the eyebrows) have downward movement one by one or simultaneously, it would be 'Pātana.'

By raising up the root of eyebrows, i.e. knitting eyebrows, it is called 'Bhrukuṭi.'

By throbbing a little bit charming and long eyebrows, it is called 'Catura.'

Slightly bending one of or both the eyebrows is 'Kuñcita.'

By amorously raising only one of (the eyebrows), it is called 'Recita,' whilst natural and innate movement is called 'Sahaja.'

Along with this kinesic articulation, Bharata develops kinesic semantics in the form of its application to various emotion expressions. Just as Ekman extracts six basic emotions such as (1) Happiness, (2) Sadness, (3) Surprise, (4) Fear, (5) Anger and (6) Disgust, Bharata also enumerates eight 'Sthāyibhāva-s' and eight 'Rasa-s.'

Sthāyibhāva-s are the eight basic emotions latent in our mind which become definite emotions by artistic stimuli, namely, (1) Amorousness (rati), (2) Funniness (hāsa), (3) Sadness (śoka), (4) Anger (krodha), (5) Vigorousness (utsāha), (6) Fear (bhaya), (7) Disgust (jugupsā) and (8) Surprise (vismaya).

And Rasa-s are the eight aesthetic sentiments which arise by the culmination of each Sthāyibhāva, namely, (1) Eroticness (śṛṅgāra), (2) Comicalness (hāsya), (3) Patheticness (karuṇa), (4) Furiousness (raudra), (5) Heroicness (vīra), (6) Terribleness (bhayānaka), (7) Odiousness (bībhatsa) and (8) Marvellousness (adbhuta) respectively.

In addition to these Sthāyibhāva-s and Rasa-s, there are still thirty-three 'Vyabhicāribhāva-s' or transitory moods such as Despondency (nirveda), Weakness (glāni), Apprehension (śaṅkā), Jealousy (asūyā), Intoxication (mada), Fatigue (śrama), Indolence (ālasya), Depression (dainya), Anxiety (cintā), Confusion (moha), Recollection (smṛti), Contentment (dhṛti), Bashfulness (vrīḍā), Inconstancy (capalatā), Delight (harṣa), Agitation (āvega), Stupor (jaḍatā), Arrogance (garva), Despair (viṣāda), Longing (autsukya), Sleeping (nidrā), Epilepsy (apasmāra), Dreaming (supta), Awaking (vibodha), Indignation (amarṣa), Dissimulation (avahittha), Cruelty (ugratā), Assurance (mati), Sickness (vyādhi), Insanity (unmāda), Death (maraṇa), Fright (trāsa) and Deliberation (vitarka).

As a sort of semantics Bharata allots certain movements and forms to certain emotions among the eight basic emotions (Sthāyibhāva), the eight aesthetic sentiments (Rasa) and the thirty-three transitory moods (Vyabhicāribhāva).

For instance, in the case of eyeball movements the allotment is as under. (NŚ 8.101b-104b)

> Now, understand the application of these (eyeball movements) to aesthetic sentiments and basic emotions.
>
> For (representation of) Heroic sentiment and Furious sentiment, 'Bhramaṇa' (i.e. circular revolving), 'Calana' (i.e. trembling), 'Samudvṛtta' (i.e. raising up) and 'Niṣkrāma' (i.e. going out) should be used.
>
> 'Niṣkrāma' and 'Valana' (i.e. triangular moving) should be employed for (representation of) Terrible sentiment.
>
> And 'Sampraveśana' (i.e. going into) is prescribed for (representation of) Comical sentiment and Odious sentiment.
>
> 'Pātana' (i.e. dropping) is to be used for (representation of) Pathetic sentiment, and 'Niṣkrāma' again for (representation of) Marvellous sentiment.
>
> 'Vivartita' (i.e. sideways turning) is meant for Erotic sentiment, and 'Prakṛta' (i.e. natur-

al) for the remaining basic emotions

Again, in the case of eyelid movements. (NŚ 8.114a-117b)
    Now, understand the application of these (eyelid movements) to aesthetic sentiments
    and basic emotions.
    'Vivartana' along with 'Nimeṣa' and 'Unmesa' should be employed for (representation
    of) Anger emotion.
    'Prasṛta' is prescribed for Surprise emotion, Delight mood and Heroic sentiment.
    'Kuñcita' is meant for (Disgust emotion? against) seeing of, smelling of, tasting of,
    touching of undesirable thing.
    'Sama' should be employed for Erotic sentiment, and 'Sphurita' for Jealousy mood.
    'Pihita' is to be used for (representation of) Sleeping mood, Stupor mood and (the mood
    caused by) suffering from wind, heat, smoke, rain, mascara and eye disease.
    'Vitālita' is used for (the Agitation mood? caused by) attack.

Even facial colours are taken into consideration for application, which not only can be origi-
nally included in 'physiological histrionics' (Sāttvika abhinaya) but also as make-up in 'decorative
histrionics' (Āhārya abhinaya).

    It is taught that facial colour is of four kinds, namely, Natural, Bright,
    Reddish and Dark.
    It is said that 'Natural' facial colour based on natural representation should be
    employed for emotions of a person who is in a neutral position etc.
    'Bright' (facial colour) is to be used for Surprise sentiment as well as
    Comical sentiment and Erotic sentiment.
    'Reddish' (facial colour) should be applied to Heroic sentiment, Furious
    sentiment, Intoxication mood and Pathetic sentiment as well.
    The face becomes 'Dark' in Terrible sentiment as well as Odious sentiment.
    Thus the facial colour should be employed to the objects of sentiments and
    emotions. (NŚ 8.161b-165a)

As linguistics synthesises phonemes and morphemes into a linguistic complex referring to
semantics, syntactics, so kinesics likewise synthesises 'kinemes' and 'kinemorphemes' into a
kinesic complex referring to 'kine-emotional' semantics and 'kine-syntactics' conditioned biologi-
cally and physically.

The glances (dṛṣti) he describes could be regarded as a partial synthesis of the facial expres-
sions composed of the movements in composite parts of the face. The first eight glances among
thirty-six glances are meant for synthetic configurations to denote eight aesthetic sentiments

(Rasa-s), namely, (1) Kāntā, (2) Bhayānakā, (3) Hāsyā, (4) Karuṇā, (5) Adbhutā, (6) Raudrī, (7) Vīrā and (8) Bībhatsā.

Eight Rasa glances (NŚ 8.47a-55b)

The extraordinarily passionate glance which originates from joy any favour and are accompanied with knitted eyebrows and a (flirtatious) sidelong look is called 'Kāntā' (lit. Lovely) glance. It is (applied) to denote Erotic sentiment.

The extraordinarily frightened glance which is accompanied with eyelids wide open and motionless and with eyeballs throbbing and turned upwards should be understood as 'Bhāyanakā' (lit. Fearful) glance. It is (applied) to denoteTerrible sentiment.

The glance which is accompanied with eyelids gradually contracted and with eyeballs rolling and slightly visible is 'Hāsyā' (lit. Comical) glance. It should be applied to the histrionics of a juggler.

The tearful glance which is accompanied with upper eyelids down and with eyeballs dull due to grief and which is fixed at the tip of the nose is (called) 'Karuṇā' (lit. Pathetic) glance. It is (applied) to denote Pathetic sentiment.

The charming glance which is accompanied with the tips of eyelashes curved, with eyeballs excited due to wonder and with (eyelids) fully open up to the corners is called 'Adbhutā' (lit. Marvellous) glance. It is (applied) to denote Marvellous sentiment.

The ferocious glance which is accompanied with eyelids fully open and motionless, with eyeballs harsh and bloodshot and with eyebrows knitted and crooked is called 'Raudrī' (lit. Furious) glance. It is (applied) to denote Furious sentiment.

The inflamed, fully open, excited and serious glance which is accompanied with eyeballs in balance (in the orbit) and with the centre (of the eyeballs) swollen is (called) 'Vīrā' (lit. Heroic) glance. It is dependent on Heroic sentiment.

The glance which is accompanied with the outer corner of eyelids contracted, with eyeballs distressed due to disgust and with eyelashes firm and close to each other is regarded as 'Bībhatsā' (lit. Odious) glance.

Theoretically we can synthesise a standard facial expression for a certain emotion whichever it may be, aesthetics sentiment, basic emotion or transitory mood, only if we select and composite certain movements of the facial parts applicable to its representation according to Bharata's prescription. And we must realise theory is not for the sake of theory, but actual practice in the tradition of Indian dramaturgy.

All the Indian performing arts, those that include Sanskrit theatre, dances and music, have been seeking the theoretical basis from Nāṭyaśāstra tradition starting with "Nāṭyaśāstra." Therefore, we can expect the total synthesis regarding the facial expression in a living practice of classical dance styles such as Bhratanatyam, Kathakali, Kathak, Manipuri, etc. In fact, as the 'abhinaya' repertoire is the most popular and most important item to any dance style, each dance

style has its own standard synthesis for daily practice and for stage performances as well.

Bibliography

As I had to leave out detailed notes and variant reading references owing to the limitation of pages, I refer to the paper (Funatsu 2000) by the author which overlaps into related topics and its philological discussion.

Sanskrit Text:

Nātyaśāstra with the Commentary of Abhinavagupta, Vol.III, Ed. by M.Ramakrishna Kavi, Gaekwad's Oriental Series 68, Baroda, 1934 = NŚ

Nātyaśāstra, Ed. by B.N. Sharma and B. Upadhyaya, KSS 60, Varanasi, 1929

Nātyaśāstra of Bharatamuni, with the Commentary of Abhinavagupta, Ed. by M. Shastri, Pt.2, Varanasi, 1975

Nandikeśvara's Abhinayadarpaṇam, Ed. by Manomohan Ghosh, Calcutta, 1981 = AD

Reference Books:

Birdwhistell, Ray L., *Kinesics and Context -Essays on Body-Motion Communication*, Penguin Books, 1973

Ekman, Paul and Wallace V. Friesen, *Unmasking the Face*, New Jersey, 1975
　　（「表情分析入門」工藤力訳編,誠信書房, 1988）

原島博 (1998)、「顔学への招待」岩波書店

Special Issue 'Kathakali', Marg, Vol.XI, No.1, 1957

'Kathakali, The Arts of the Non-Worldly', Marg, Bombay, 1993

Pandya, Shveni P., *A Study of the Technique of Abhinaya in Relation to Sanskrit Drama*, Bombay, 1990

Articles:

Funatsu, Kazuyuki, (1999), *'An Introduction to Nonverbal Communications with Reference to Indian Art Forms,'* "Studies in Humanities: Culture and Communication, Faculty of Arts, Shinshu University," No.33

Funatsu, Kazuyuki, (2000), *'On Body Expression according to Histrionic Theory in Ancient India'* (in Japanese), "Memorial Volume of Dr. Yasunori Ejima," Tokyo (「古代インドの演戯術における身体論考」、「江島恵教博士追悼論集　空と実在」春秋社、2000)

Web Sites:

Homepage of Perceptual Science Laboratory at the University of California - Santa Cruz, http://mambo.ucsc.edu

Facial Analysis, http://mambo.ucsc.edu/psl/fanl.html
　　(Very useful because leading researches are introduced such as of P. Ekman, C. Darwin, Harashima Lab, etc.)

Hager, C.Joseph, Final report to NSF of the Planning Workshop on Facial Expression Understanding, 1992, pp.12-14., http://mambo.ucsc.edu/psl/nsf.txt

VTR:

『色彩の舞踊劇カタカリ』（舞踊篇）、ポーラ文化研究所、1983
(This VTR includes demonstrations of eyeball movements, facial expressions for Rasas, and hand gestures by Kathakali dancers as well as Kathakali performance.)

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Photo / Eight Rasa abhinaya-s
Top from left to right: Śṛṅgāra, Hāsya, Karuṇa
Middle from left to right: Raudra, Vīra, Bhayānaka
Bottom from left to right: Bībhatsa, Adbhuta, Śānti (not mentioned in this paper)(Marg 1957, p.21)