
FLOW OF INFORMATION AND ENERGY IN THEATRE

EXCERPT OF DOCTORAL THESIS ON PSYCHOPHYSIOLOGICAL AND BEHAVIOURAL BACKGROUND OF PERFORMING ARTS

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Objective

The main objective of the 10-year long research was to combine the subjective creativity of theatre with the analytical force of neurobiology.

Since there were only a few examples available worldwide on the scientific interconnection of the two disciplines, the research started off parallel on three different tracks:

- studying the latest, available, relevant researches in psychology and neurobiology, and interpreting them within theater activities.
- studying theatrical forms in which the interpersonal processes could be well-defined and practiced, including the acquiring of self-knowledge and autogenous techniques.
- performing instrumental - mainly cardiac - measurements, in actor-spectator and actor-actor context, observing the interactions in five different phases of theatre work.

Following a 5-year long theoretical training and preparation period, in 2011 a series of biometric data collection was begun. Although, the aim originally was to measure the emotional adherence of the audience during a theater performance, an ever more convincing evidence was found on the alignment, the simultaneity of the actors improvising. Therefore, after the refocusing of the research, this phenomenon was approached by observing the parallel changes in heart function, first during improvisations, and then again during performances. Furthermore, as a new direction, the correlation and contra-correlation phenomena were observed 1) in situations with joint attention, 2) in case of adherence to the story and detachment from it, and 3) in the recipient's status.

It was also assumed that if the actor learned to monitor his inner operation, he would be able to recognize when and under what conditions did he have a flow or integration flow experience. Thanks to the regular practice of introspection, the trainers and actors involved in the research can be regarded as trustworthy "information providers".

Structure

In the first 3 chapters of present doctoral thesis the psychological, theater theoretical and personal experience background of the research is discussed. Followed by the description of the operation of Utcaszínházi Alkotóközösség (SpectStreet), which provided the organizational background for the research and its activity is the "creation" related to the DLA. In Chapter 5, the research team, the tools and the preparation work, the building blocks of the research and the circumstances of the data collection are introduced. All laboratory events of the research were

documented and evaluated, including (a) the psychodynamic training series preparing the first HRV measurement, (b) the interactive improvisations in front of an audience (Eötvös Loránd University, Faculty of Education and Psychology, Budapest, 2012), (c) rehearsal measurements (Eötvös 10 Cultural Center, Budapest, 2013), (d) performance of a monodrama – Vajda’s “Though I Was a Good Mother” (Pince Theater, Budapest, 2013), and (e) a repertory performance of Miller’s “A View from the Bridge” (Örkény Színház, Budapest, 2014). In the next chapter the results of the research and its future are discussed. Finally a sensitive field is touched on: theater and spirituality.

Findings

The results of the measurements were analyzed with statistical and empirical methods, and examined in light of the personal experiences of the spectators and the actors. Based on these, the theses are as follows:

- The parallel analysis of the HR diagrams and the video recordings confirmed the assumption that the positive phase-coherence between the heartbeat of actor and audience, as well as actor and actor refers to a kind of consistency, as the opposite phase cardiac function refers to a some kind of resentment. Presumably – and the analysis of a greater number of performances could numerically reinforce this – the total reported correlation in auditorium-stage relations of the more impressing performances resides more often in the range above $\rho +0.5$ and below $\rho -0.5$ (referring to the statistics relevance scale).
- In the research it was also approved that a basic form of theatre experience for the audience is *adherence to the story* which is a threshold phenomenon, meaning that a change occurs in the state of mind and body, and perhaps emotions linked to a definite moment in time, which may last over time, and a few momentum is sufficient to trigger it and also to stop it.
- The assumption was also proved that for an actor to live through a role – similarly to the audience’s adherence – is a threshold phenomenon, which occurs with resilience, a slight re-modification of HR, broad variability and some degree of suspension of the brain-part called Praecuneus.
- About the impact: the audience constantly switches places on the axis of adherence and observation – on the observation end one can find remarkable signs of cognitive functioning, I-conscious thoughts, opinions, internal debate or division and vivid body sensing, while on the adherence end a subtly altered state of consciousness which is associated with fading self-identification, cognitive functioning, and loosening bodily sensation. It is not presumed, that at the adhered end of the scale cognitive functioning stops, but it ceases – and the contemplating mode is not controversial either with emotional experience. The emotional or sensual experience – especially in case it is negative – dissolves the altered hypnotic state of mind. The alternation between adherence and evaluation consists of two separate operating coefficient planes within the dynamic system of being thrilled/being indifferent and liking it/not liking it values: A) I’m excited and I like it, B) I’m excited, but I do not like it C) I like it, but I am indifferent, D) I do not like it and I am indifferent. The mental evaluation of the ongoing process – the understanding of the stage events is the third axis of the dynamic system above.
- The adherence to the story, to the fate of the characters includes visceral tracking of the actor playing in the story.

- Adherence is a sensitive and volatile state, and there are a range of influences which will surely move the audience on the imaginary scale from the observer status towards adherence. The structured and easy-to-follow, but not-too-slow storytelling – let it be in words or movements – enhances the interest of the audience.

- The audience does not like to be unnecessarily dislocated from the narrative.
- The audience prefers some kind of – even if superficial – continuity in the relationship of the events.
- The expression of negative emotions and unpleasant sensual effects result in a decline of receptive skills.
- The audience basically switches off, if it can predict what is coming next.
- However, it does not like it either, if something totally different happens than expected.
- If the reality of imagination behind the stage events is detailed and precise, then adherence strengthens; and it weakens, if something is not believable.
- The actor can hold the audience's attention more effectively, if he monitors his physical processes and from time to time he reconnects with them.
- Flexible HRV is related to a more coherent performance. When comparing the HR max% diagrams of the workshops to the video recordings of the etudes, it can be clearly seen that if an actor has a wider variability, he participates more creatively in tasks that require spontaneity, like improvisation.
- When the actors during improvisation use brain structures that are responsible for representation and implementation of common tasks, their heartbeats will be phase-synchronized.
- Preliminary physiological coherence facilitates the creation of joint action in improvisation or achieving other shared stage goals.
- The research confirms with reference to theater activities that the probability of the development of integration and flow phenomena is inversely proportional to the degree of anxiety. There is less chance for the elimination of the "feature"-anxiety, however, for the resolution of the "status"-anxiety a variety of techniques can be applied that facilitate a "cognitive restructuring". In the experiment the actors were caught several times as they offset the motor and somatic functions from the control of the lower brain regions by applying autogenous techniques deliberately. The assumption was also scientifically confirmed that preliminary joint focusing/relaxation exercises facilitate alignment and adherence into the play.
- Positive feedback, like the laughter of the audience, has an anti-anxiety effect on the actors. As an effect of laughter, a positive excitement increase and flexible HRV stabilization can be observed with the actors.
- A longer flow experience may have a positive excitement-enhancing, self-reinforcing effect involving even several people, in similar ways.

Measurements

The biometric data was collected by Polar Team-Pro designed and developed for interconnecting the cardiac data of 28 players at a time with a small device fixed on the chest, establishing bluetooth connection to a central unit. Two sets of Team-Pro were used to simultaneously measure 56 person in given time and space.

Scientific and technical support:

György Bárdos DSc, head of the Institute of Health Promotion and Sport Sciences of the Faculty of Education and Psychology of ELTE, as experiment supervisor, Dorottya Bencze physiologist, and János Körmendi medical measurement theory researcher contributed to the processing and analysis of data.

The biometric data collection was assisted by the experts of Polar Hungary, József Nagy B. and Ákos Móra.

The EEG experiments were designed and assessed by the research engineers of Mental Fusion, László Lovass and Zoltán Fodor.

Theater experiments:

The members of Utcaszínházi Alkotóközösség were subjects and participants of the research.

Judit Pogány, an outstanding Hungarian actress with almost 50 years of theater experience, from the very first moment supported the research and faced the challenges of the measurements at Pince Theatre with unique curiosity.

Örkény Theatre, multi-awarded company of Budapest, bravely overtook the unknown task of measurements supporting this crucial phase of the research with its performance and infrastructure.