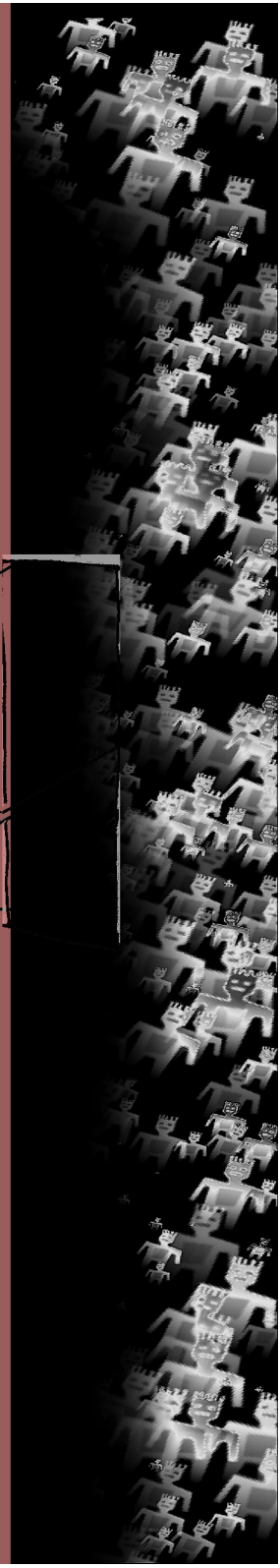
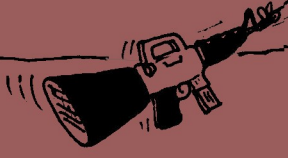
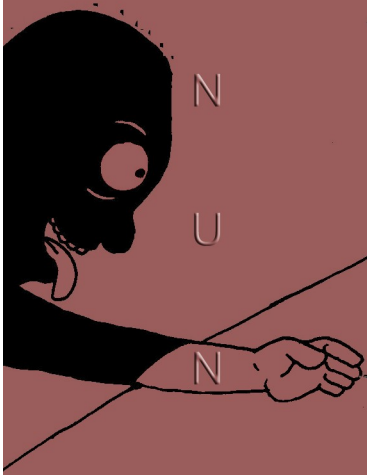


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**Composer / Researcher:**

DIMITRI VOUDOURIS

[1961\*]

**Compositions:**

MUSUNUNGURI

1/chikamu - . 1

*For MUCHETO a designed space*

**Composed:**

2009

**Duration:**

17min 08 sec

An Interactive political game with speech synthesis

For:

TTS (text to speech),  
Prepared natural voice,  
Computer assisted processing

# **Analysis of Physiological and Psychological modular content**

## **Dimensions of feeling**

I will analyse human feelings in terms of a number of mutually inclusive dimensions, namely, **arousal levels, cognitive content, quality, intensity and duration.**

### **Arousal levels**

The receipt of stimulus information at receptor level is followed by physiological arousal in the central nervous system, the autonomic nervous system and peripheral motor system. This physiological arousal does not only create tension in the body, but also becomes felt at a psychological level. This feeling often has a more or less distinct bodily component (a quickened heart beat, sweat on the skin, a sickly feeling in the stomach, increased blood pressure, etc.). Thus we can say that physiological arousal and the accompanying tension are important components of states of feeling, and that it is particularly the impulses coming from the viscera (which are regulated by the autonomic nervous system) which contribute to the vague pleasantness or unpleasantness associated with sensory feelings, and to the distinct pleasantness or unpleasantness associated with emotions.

### **Psychophysiological Arousal**

As the physiological arousal increases and intensifies a person's feelings and behaviour increases in intensity and change their quality. We have two aspects of arousal the directive and the activating aspects. The former has to do with the physiological fact that incoming stimulus information creates arousal in the various nervous systems. The latter has to do with the meaning a person attaches to the stimulus information what he sees as its cognitive content. We can redefine the directive component of arousal as psychological behaviour arousal. It is the cognitive content that decides the quality and intensity of the feeling.

### **Cognitive content**

Emotion seen as a state of being involved in something requires a meaningful cognitive content. Sensory feelings and moods, on the other hand do not have a distinct cognitive content, but they can exert a powerful influence on our emotions, in the sense that they create a 'background atmosphere' that then colours our emotions of the moment. Physiological

arousal and cognitive content constantly interact with one another during the differentiation of an emotion.

### **Two factor theory of Stanley Schachter**

Formulated that the hypothesis that the differentiation of an emotion involves the interpretation of physiological arousal in terms of an appropriate cognitive content. The conscious experience of physiological arousal and the conscious experience of a stimulus situation are both equally important and integrated components of emotion. According to Schachters theory, the sequence of events leading up to the differentiation of an emotion can be represented as follows. Arousal in the autonomic nervous system was artificially induced in the experimental situations. In every day life the perception and interpretation of physiological arousal is only a secondary source of bodily sensations once an emotion has differentiated.

### **Cognitive Appraisal Theory**

The notion that physiological arousal serves only as a secondary source of bodily sensations once an emotion has differentiated, is an important premise of the cognitive appraisal theory of Magda Arnold and Richard Lazarus according to them perception of physiological arousal is not an essential element for the differentiation of emotions.

The decisive factor in the differentiation of an emotion is the cognitive content of a situation i.e. the meaning a person gives to it.

### **Quality**

The quality of a state of feeling means the general nature of the feeling being experienced. It could be said, for instance that the quality of sadness and fear differs from the quality of joy and love, in the sense that the first two are unpleasant while the latter two are pleasant, The quality of states of feeling is usually seen in relation to the so-called hedonistic continuum. It is however difficult to place a person's feeling at a specific point on the hedonistic continuum scale because feelings are not pure, what is pleasant for one person may be unpleasant for another.

### **Intensity**

The intensity of a state of feeling refers to the strength of the feeling experienced. The strength of a feeling also varies on a continuum from extremely low intensity to extremely high intensity. The intensity of a person's feeling interacts with at least two factors, namely, the level of psychophysiology experienced and the quality of the emotion experienced.

## Duration

Apart from varying quality and intensity, feelings also have duration. There are many factors that determine the duration of an emotion. One important factor is the duration of stimulation which the feeling gives rise to. The duration of stimulation aimed at bringing about a feeling, is related to both the intensity and the quality of the feeling. This pattern applies to both positive and negative feelings.

## Emotional Tension

Emotional tension and the term **emotional tension threshold** refers to the amount of emotional tension a person can endure or cope with before his effective functioning becomes impaired. A person's basic tension level is to a large extent dependent on homeostatic regulation in the autonomic nervous system. Both a basic tension that is too low or too high indicates an imbalance in the autonomic nervous system. The intensity of a person's emotional tension threshold: *The greater the degree of autonomic homeostasis or balance, the lower will be the intensity of emotional tension and the higher will be the emotional tension threshold.*

The emotional tension threshold is not only influenced by the autonomic nervous system but by the **emotional lability** and **temperament**.

Emotional lability refers to the ease (speed and intensity) with which homeostasis in the sympathetic and parasympathetic divisions of the autonomic nervous system become disturbed because of synaptic malfunctioning at various levels of the nervous system.

- People with a labile nervous system react with greater speed and intensity to a stressor than do people with a stable nervous system.
- People with a labile nervous system have a high basic tension level and a low emotional tension threshold. The reverse applies to people with a stable nervous system.

The concept temperament refers to the relatively consistent and characteristic emotional nature, general mood and reaction pattern of a person. It is generally accepted that a person's temperament is largely determined by inherited attributes of the nervous and endocrine systems.

Four dimensions of temperament:

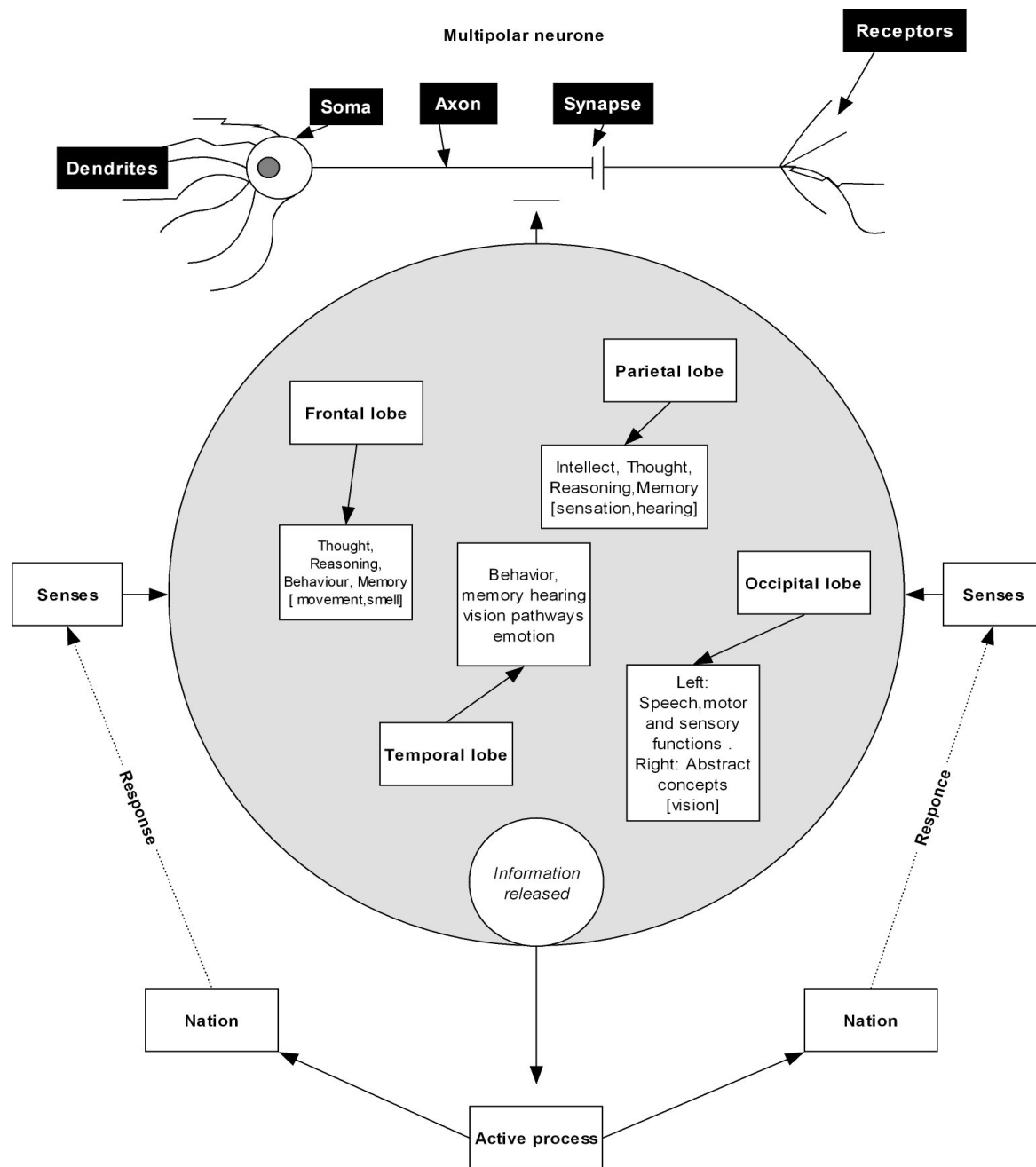
- General activity level- with the extremes of high activity and high passivity.
- Emotionality- with the extremes of high emotional perturbability and high emotional imperturbability.
- Social disposition- with the extremes of gregariousness and detachment.
- Impulsiveness- with the extremes of self control and lack of self-control.

Such dimensions of temperament are extremes on a continuum, e.g. high activity \_\_\_\_\_  
high passivity.

The game installation is a three dimensional work designed to transform the perception of space bringing interactive theatre to the audience. MUSUNUNGURI (Shona meaning liberator) will be an ongoing series of works composed for this purpose. In my fascination for science fiction and cartoons I attempted to explore systemic pathways of communication focusing on neuronal cellular activity in the human brain. Imagining nerve cells are independent units addressing various functions in the human body with a plethora of information that is contained and like in biological models happenings occur at once or at various time intervals, I arrived at the first exploration -1/chikamu -.1 a political game which relates to the non-fictional story in employing a fictional mind exploration of Zimbabwean freedom fighter and now president Robert Mugabe. The work captures the thinking process of the Man who was once hailed as a foremost leader in Southern African region; as he has been highly respected by both African and Western leaders. Did his so-called psychoses lead him in becoming a fascist tyrant in his country as well as the most feared politician to emerge from the Southern African region, or is it Western propaganda? In this part of MUSUNUNGURI -1/chikamu -.1 we notice the exploration of issues that are handled by the liberator relating to the current situation in Zimbabwe such as the state economy, socialism / democracy, land issues, cholera, foreign policy, propaganda etc. in Zimbabwe's political affairs. The imposing of sanctions, what were their aims, in the long run to exploit the mineral wealth as well as the issue of land distribution? These are just a few questions that can only be answered in the game. Observing the above explanation on emotional tension and dimensions of feeling it is clear that such emotion in MUSUNUNGURI is not directly associated with the president but with a nation as a whole, Each person is not only a recipient of information but is also a contributor of information. It is thus important to take into account that collectively individuals or a nation may respond in two ways agreeing or disagreeing with the information that is provided to them but each individual will respond emotionally in a particular way that is conducive to the way that a nation at a given time frame will react. Let us look at the following example: ' The nation is trapped within a psychological pattern of thoughts were removing the president by forceful means is not possible as he has promised land to all the war veterans and delivered. The president is psychologically creating all the right moves to free his country from the oppressors and he is giving to the <people> what they want, so toppling him will not happen. He then turns and blames countries like the USA, Britain for imposing sanctions, the negative implications that such measures have on the economy of the country and is likely to bring suffering and hate for western super powers amongst his people.'

*Game Installation:* MUSUNUNGURI is a work in progress and will be completed some time in the near future. The work is for level one/platform one of the designed space 'MUCHETO (Shona meaning boundary)', I am anticipating having six collective levels one on top of one another representing the thought processes flowing through MUSUNUNGURI's mind, how they are selected, interfered with and executed will be addressed in the game. The visual and sound scenes will be selected and executed by activation sensors on performance in the game also by movement of the audience in space. The sound scenes are one minute samples that can be selected by the computer from each level/platform and dispersed over the range of speakers allocated to each level/platform the diagram: *Anterior view shows level one of the the installation on page 8.*

The sound and visual execution will depend on the outcomes of the game being played. The audience will be allocated into teams and interact mentally and physically with occurrences taking place in the game. MUSUNUNGURI will address audibly and visually mental and physical models that are associated with both physiological and biochemical patterns in the



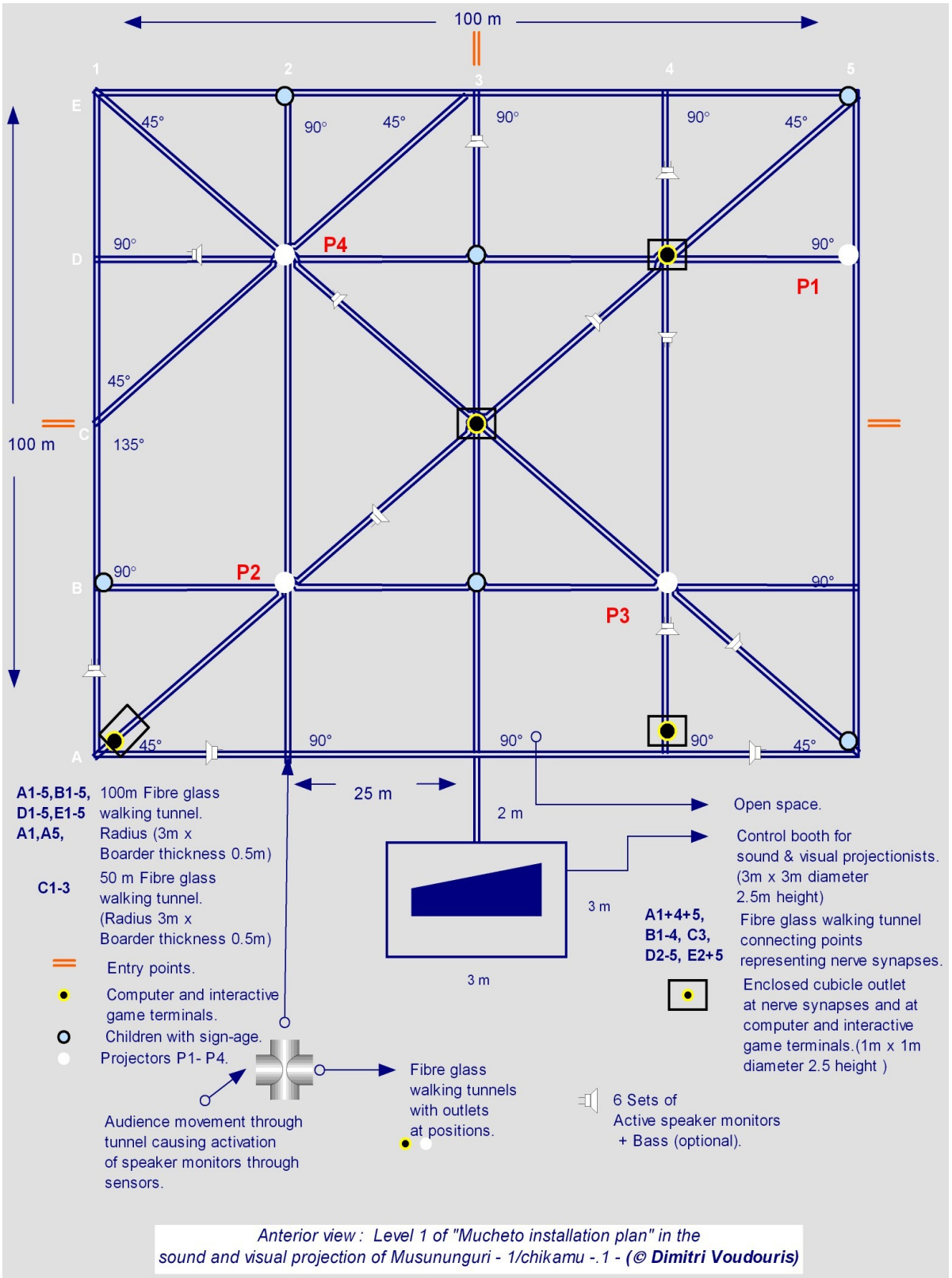
*Information exchange systems in relationship to the synthesis of work*

brain that generate thought processes.

*Composition techniques used:* This section of MUSUNUNGURI was composed for speech synthesis which consists of artificially produced speech and natural speech. The violence in expression could not be matched in writing this work for conventional notions thus it was clear that the route I followed was the most expressive, the science fiction notion of super-heroism adds to the psychoses that consumes MUSUNUNGURI in this concentrated state of aggression he is in and keeps reoccurring through out the duration of the work. The chromatic progress provides an anchor to the ear an octave and a half above. Beneath it other happenings map out a more meandering ascent – an explicit realization of the sort of wandering chromatic line that was concealed by octave transposition. One expression would



leap to take over a pitch area previously occupied by another, or start colonization of a vacant pitch area. The ferocious *fff* with which the clicks and bangings and dark humour are expressed make it possible for some mitigation of this overwhelming sonority is essential for both composer and listener. In -1/chikamu -.1 I planned to work with mainly vocal tension, with the use of Mbrola TTS (text to speech) synthesis for testing of prosody generation algorithms. The language of choice used in -1/chikamu -.1 is in English (UK), I produced different vowel expressions and simple repetitive phrases paying particular attention to pronunciation and used it to create gunfire, primal outcries, animal sounds, explosions, and vocal aggression etc. Through the use of Praat a Program which aims to construct possibilities for phonetisation and transcription, PROSE for prosody extraction and PSOLA for prosody manipulation. I was able to focus particularly on vocal tension within phrases, this resulted in discovering emotional mechanics in language. Hidden verbal expression in messages be it in the form of sound distortion or noise were purposefully implanted to capture various vocal tensions, in the cacophony of language other messages were not word pronounced as is in VOZ DA REVULCAO but were spelt out.



## References

- 1] JR Milleson / Julian C Leslie : Principles of Behavioral Analysis second edition page 177- 310
- 2] AC.Guyton: Human Physiology - The nervous system page 457-605.
- 3]L.Stryer : Biochemistry – Membrane transport Chapter 36.
- 4]JW.Kayne / MM.Sternheim – Nerve conduction Chapter 20 – 327- 342.

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- 5] James Kilgore : We are all Zimbabweans.
- 6] Heidi Holland : Dinner with Mugabe.