



# Introduction

- The goal of the **Emotion Research** WEB-Site is to act as a repository of information pertaining to the scientific study of emotion. It does not assume a particular definition of emotion (should such definitions exist). It rather presents, in an integrative ('linked') manner, the main views of **Neuroscience**, **Psychology** and **Cognitive/Computer Science**. It also includes a succinct **history** of emotion research, and **practical information** such as researcher web-pages, conference announcement and other relevant on-line resources.
- It is designed to foster **interdisciplinary awareness**, and to promote **teaching** opportunities.
- Pages are **focused**, **modular**, and ideally can be 'reshuffled' by a calling document, to match a particular teaching emphasis or course structure.



# Introduction

The page is ‘**Edited**’ and includes ‘**Contributions**’.



Teachers and researchers are welcome to submit material, or additional links to be included in the page. The goal of the editing is to ensure a ‘**reasonable**’ quality and relevance of the information, to **avoid duplications**, and to provide **appropriate links** to other parts of the page.

Whenever possible, links to **original** texts, pictures or sounds are included to allow students and researchers to refer to the ‘raw’ information, rather than the edited form.



# The Page Structure

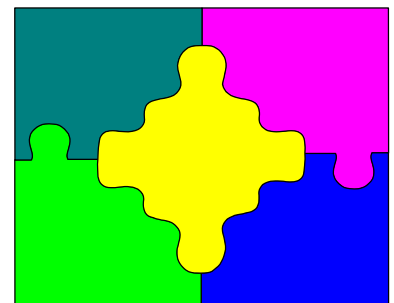
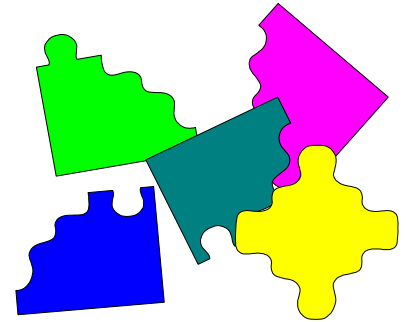
➔ The History of Theories of Emotion

➔ Emotion Resources

- Conferences, journals, course syllabi ...

➔ Emotion Research

- Psychology
- **Neuroscience**
- Cognitive/Computer Science





# History of Emotion Research

Attempts to scientifically ('rationally') study emotion are not new. This section of the page outlines the main streams of thoughts that eventually lead to modern theories.

**Plato, Aristotle:** Pleasure, Pain, and 'non-neutral' states.

**The Stoics:** A first classification of emotions.

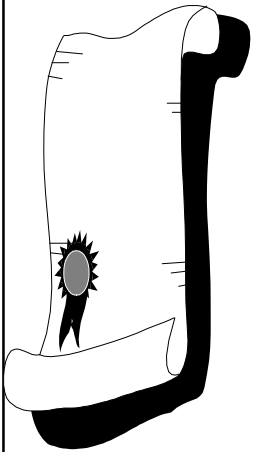
**Patristic and medieval doctrines:** The good and the evil.

**Renaissance:** Emotion and the body, emotional expressions.

**17th century:** The views of Descartes and Spinoza.

**18th century:** British, French and German theories.

**19th century:** Peripheral, central and epiphenomenal theories.





# The Psychology of Emotion

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## • Experimental and Cognitive Psychology

Social/Ethological, Behaviorist, Cognitive, Physiological

## • Clinical Psychology

Psychoanalytic/Psychodynamic, Behavioral, Cognitive-Behavioral, Experiential

## • Selected Topics

Selected Definitions and Functions of Emotions

Methodologies for Studying and Assessing Emotions

Cognitive-Affective Interactions

Basic Emotions

Independence of Positive and Negative Affects

Emotions and Consciousness

Defenses, Coping Strategies, and Emotions

Neurochemistry of Affect

Assessment of Affect and Affective States





# Computational Models

Emotion models exist for different purposes and at varying levels of abstraction

## • Architecture Level

The goal is to make more **realistic agents** (OZ, CMU), exploration of **agent architectures** and architectures of cognition (Newell, Sloman), and **derivation of emotional states** from situation variables (Eliot, OCC).

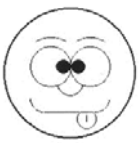


## • Task Level

The goal is performance enhancement of a specific task, such as **natural language** processing (Dyer) or **action selection** and monitoring (Allen).

## • Mechanism Level

The goal is to investigate the mechanisms underlying emotional processing. Examples of models include the role of emotion on **cognitive processes** (Dyer), **cognitive appraisal** of emotion (Scherer, Chwelos and Oatley, Frijda and Swagerman), **affective priming** (Phaf).

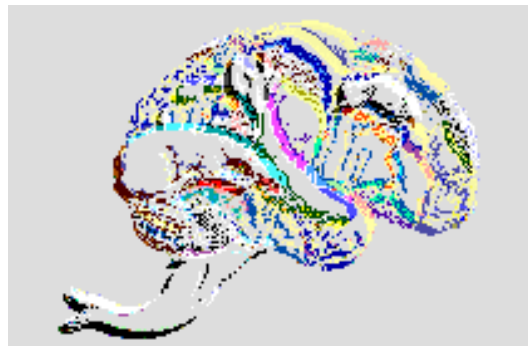
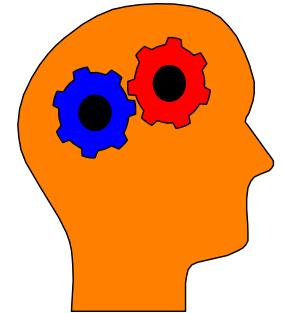


# Neural Basis of Emotion

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The neural substrate of emotion has been studied at different levels.

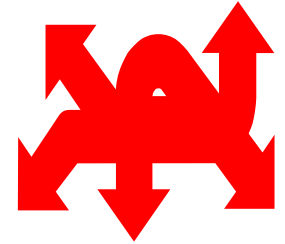
- The **Subcellular** Level: Neurochemistry, Biophysics, Synapses, Drugs...
- The **Cellular** Level: Single Cell Morphology and Physiology.
- The **Region** Level: Lesions and Stimulations Data, Clinical Data.
- The **Circuit (System)** Level: An Ensemble of Connected Regions.
- The **Schema** Level.



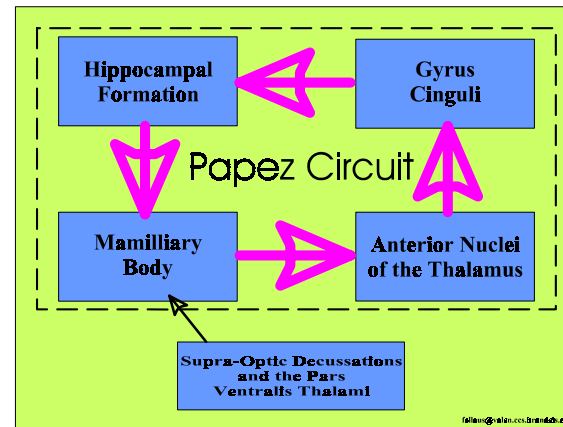


# Circuit Level

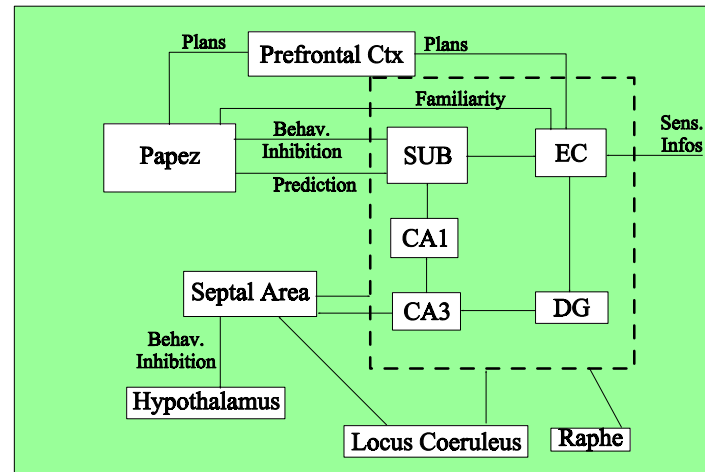
**Example:** An overview of some major circuit-level theories of how several regions might cooperate to yield emotional experiences and expressions.



The Papez Circuit



The Gray Circuit

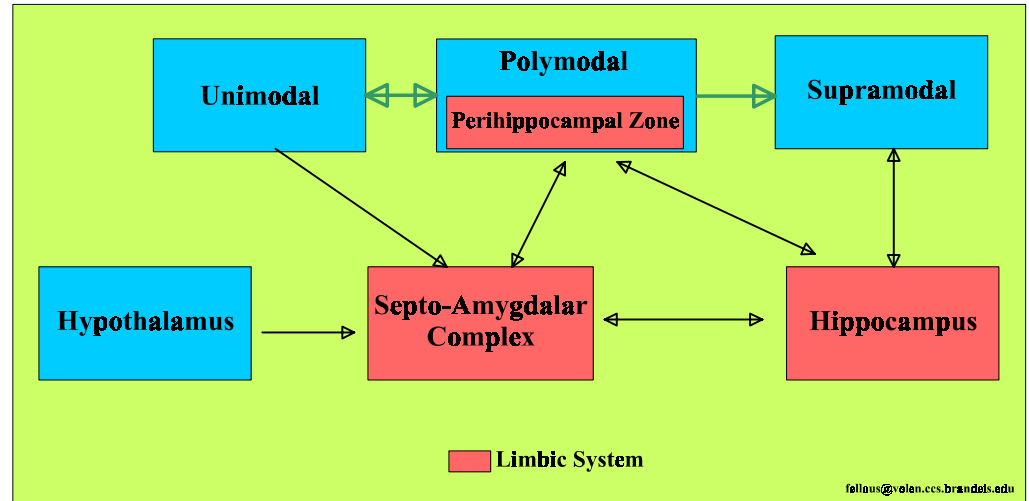




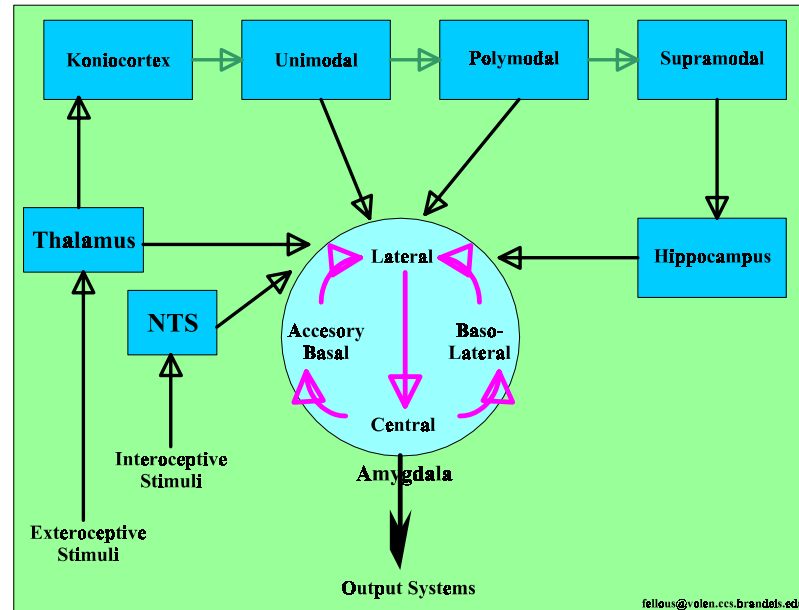


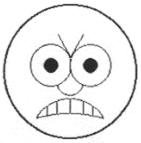
# Circuit Level

## The Limbic System (according to Swanson)



## The LeDoux Circuit (fear conditioning)

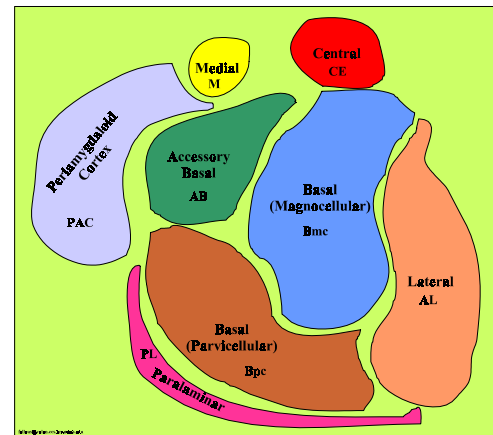




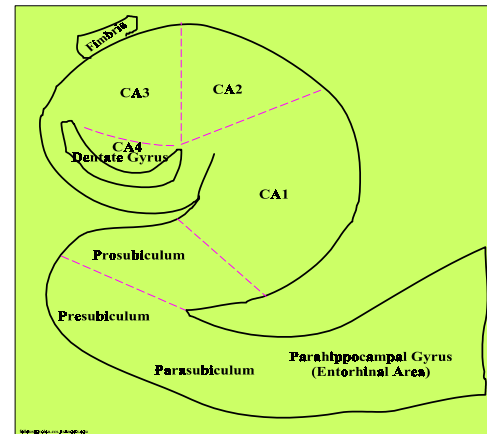
# Region Level

**Click** on any of the circuit components, and get more information about the region of interest ...

## The Amygdala



## The Hippocampus





# Conclusions

- Some topics in Neuroscience are too **ill defined** at present to be addressed in a rigorous experimental fashion. These topics include **consciousness**, **emotion**, the neural **representation of time** ...
- A first step in approaching these issues is to **integrate ideas and data** from other disciplines such as Psychology, Cognitive or Computer Science.
- Creating a **Web-Site** allows for the gathering of disparate information types including sounds, images, movies, computer programs (models). Calling documents may **organize** the information for their specific purposes, such as teaching.



# Conclusions

- A ‘**Theme Page**’, such as ours, allows for relevant information to be found rapidly, either locally or on a remote site.
- **Contributions** to the Emotion Page are strongly encouraged. They can be an addition to the actual page, or a (*stable*) link to a relevant page elsewhere.
- Ideal contributors are **teachers** (with new organization of the material) and **researchers** (with up-to-date, in depth, presentation of individual pieces of information).

Acknowledgments: We wish to thank all the contributors, and Michael Cramer for supplying the ‘emotional faces’.