

# Babbage Cabbage: Empathetic Living Slow Media

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## 1 Introduction

Babbage Cabbage is a new form of empathetic living media used to communicate social or ecological information in the form of a living slow media feedback display. In the fast paced modern world people are generally too busy to monitor various significant social or human aspects of their lives, such as time spent with their family, their overall health, state of the ecology, etc. By quantifying such information digitally, information is coupled into living plants, providing a media that connects with the user in a way that traditional electronic digital media can not. An impedance match is made to couple important information in the world with the output media, relating these issues to the color changing properties of the living red cabbage.

The motivation behind this research is two-pronged. Firstly, to inform, through ambient living media that elicits human emotions such as empathy and care for the social and organic happenings around a person's life. Our thesis is that, just as a human reacts differently when receiving or appreciating a living flower rather than a plastic replica, so too would a living media promote more human interest and empathy about organic based information. Living things evoke feelings related to empathy and recognition of a common struggle in the world which is different than what can be evoked by artificial or digital imitations. This is based on the fact that it has been shown that humans have true empathy for creatures which are alive [Thompson 2003]. Secondly, the use of living organisms to represent the significant portions of one's life adds semantics to the manifestation, since social aspects such as relationships and addictions thrive and decay, so would aspects of the living organism. Thus, by tying together digital media with the living world, we can develop media that evokes emotions including empathy and care regarding social and ecological information.

We hope that by radically exploring into the realms of empathetic living media the boundaries of technology may be challenged, and new waves of innovations may thus be brought forth through the use of other living organisms to create other forms of interactive empathetic living media. It is most important to have an impedance match between the coupling of the input and output of the media. In this case the media is living, and can grow, decay, and change various hues of colors. Therefore we propose it to be tightly coupled with digitally measured information which represents social, human or ecological information such as families, health, emotions, ecosystems, etc.

There are a few key areas of research that are related to our living media system and provide key background elements. The first

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area of research pertains to the user interaction issues. Living media seems most appropriate as a peripheral interface permitting the user to engage and bring it into focus as desired. Another key area pertains to the research on living organisms, which are a kind of media, in the broad definition as an extension of man [Mcluhan 1967].

## 2 System Description

We have developed a system to use living organisms as part of a novel digital ambient media. In order to accomplish a controlled system which provides meaningful responsiveness to input, a closed-loop mechatronic control system was developed. As an interactive system, empathetic living media engages the user visually and takes input data from various sources. The visual engagement is accomplished through the relative level of automatically controlled pH values and the resulting changes of color of red cabbage over time.

A garden of cabbages can visualize vital information assigned to it as an ambient display. The user selects and assigns data flows she wishes to visualize in the cabbage garden from a graphical user interface. This involves choosing the location and dynamic aspects of the color changes. The computer gathers and maintains the input data streams and sends to the control system a set point indicating the appropriate color. The control system changes the pH level of the solution as needed, allowing the cabbage to change to the required color. As an example scenario, one portion of the cabbage garden in an office can be assigned to represent global warming issues and another relates to the company's carbon footprint for that day. This visualization would let the users see the relation between the two information sets and the contribution from one to another. This system could also be setup in the home or office as a beautiful display. Besides being an ambient media, watching the organic color change of the living plant gives a calming effect to the user.

## 3 Conclusion

Babbage Cabbage: Empathetic living media is the revolutionary system that enables the use of living creatures as a controllable ambient display. Information based on human and natural information is quantified digitally and communicated in the form of ambient display by computer controlling the color of red cabbage, thus creating a novel media that is alive.

## References

- MCLUHAN, H. M. 1967. *Understanding Media: The Extension of Man*. New American Library, October.
- THOMPSON, K. 2003. Promotion of empathy and prosocial behaviour in children through humane education. *Australian Psychologist* 38, 8 (November), 175–182.