

# Wiseman's Notes on Radial Menus in PIXIE

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July 2<sup>nd</sup>, 2008

First Draft: July 7<sup>th</sup>, 2008  
Current Draft: July 7<sup>th</sup>, 2008

## Preface

The following are excerpts from the personal papers of Neil Wiseman. They are taken from the Wiseman papers which are catalogued and kept in the Manuscript Room of the University of Cambridge library. I have to thank William Newman on several counts for his help regarding Wiseman's work:

- It was through his writing in the seminal book on interactive computer graphics:

Newman, W.M. & Sproull, R. (1973). *Principles of Interactive Computer Graphics*, 1st ed., New York: McGraw Hill.

That I first became aware of the work of Wiseman and his colleagues at Cambridge, and what I believe to be the first use of radial menus in human-machine interaction.

- It was in response to my inquiries that William informed me that Wiseman's papers had recently been catalogued and were now available at the library of Cambridge University.
- He then went spent an entire morning ushering me through the rather involved process of getting proper credentials so as to be able to have access to the papers.
- Finally, his guided tour of the library, was an added bonus.

For his generosity and collegiality, I am more than grateful.

## Introduction

What lies behind this brief note is a desire to learn more about the history of radial menus. As mentioned above, these were briefly described by William Newman in Newman and Sproull (1973). The book also cited the following paper as a reference to the work described:

Wiseman, N.E., Lemke, H.U. & Hiles, J.O. (1969) PIXIE: A New Approach to Graphical Man-machine Communication, *Proceedings of 1969 CAD Conference Southampton*, IEEE Conference Publication 51, 463 – 471.

During a work visit to Cambridge, I went to the library at the Computer Science Unit of the University of Cambridge to see what I could find relating to PIXIE, in general, and its use of radial menus, specifically.

The first thing that I did is make a copy of the paper by Wiseman, et al, cited above. There I found the following brief mention of the use of radial menus:

The control lightbuttons which are used frequently within a mode to carry out a sequence of operations. These buttons are displayed around the tracking cross and move about with it so that the user's hand is always close to these buttons when he needs them. To avoid clustering a large number of control buttons around the tracking cross, it is arranged that only buttons for those actions which are legal at any given time are displayed and also that the user may select different sets of legal buttons by pointing at one of them (which acts as a sort of rotating switch for the rest). (p. 466)

However, while there was some description of how one interacted with PIXIE, there was no further specific description of the radial nature of the control lightbuttons, nor was there a figure (although there was a figure in Newman and Sproull).

I could find nothing else in the Computer Unit Library on the radial menus, which may be due to the quality of my search rather than what is actually there.

Regardless, I then called William Newman, who resides in Cambridge, and who was familiar with PIXIE and, as mentioned, had written about it. This led me – due to William's help - to the Wiseman papers in the manuscript room of the main library at Cambridge University.

## The Wiseman Papers

This is a collection of Wiseman's papers that range from correspondence, the design of a new graphics tablet, drafts of research proposals and patent applications, and his projects, including PIXIE. The collection has been catalogued as follows:

Harper, Peter & Powell, Timothy E. Powel (2007). *WISEMAN, Neil Ernest (1934-1995)*, Computer Scientist. [NCUACS catalogue no. 154/4/07](#), 57pp. Cambridge University Library.

The material that I will cite below comes from Folder B.218 of the Wiseman papers.

The most interesting findings from the papers, relative to radial menus, were:

1. A further description of the control lightbuttons
2. A hand drawn figure, which is very much like the one that William Newman presented in Newman and Sproull.
3. Proof that there was a film made demonstrating user-interaction with PIXIE

I will now address each in slightly more detail.

## Description of the Control Lightbuttons

The following is a transcription that I made from some undated handwritten notes that Wiseman had made to support a talk on the user interface of PIXIE. They give a bit more information on the control lightbuttons than what is found in Wiseman et al (1969):

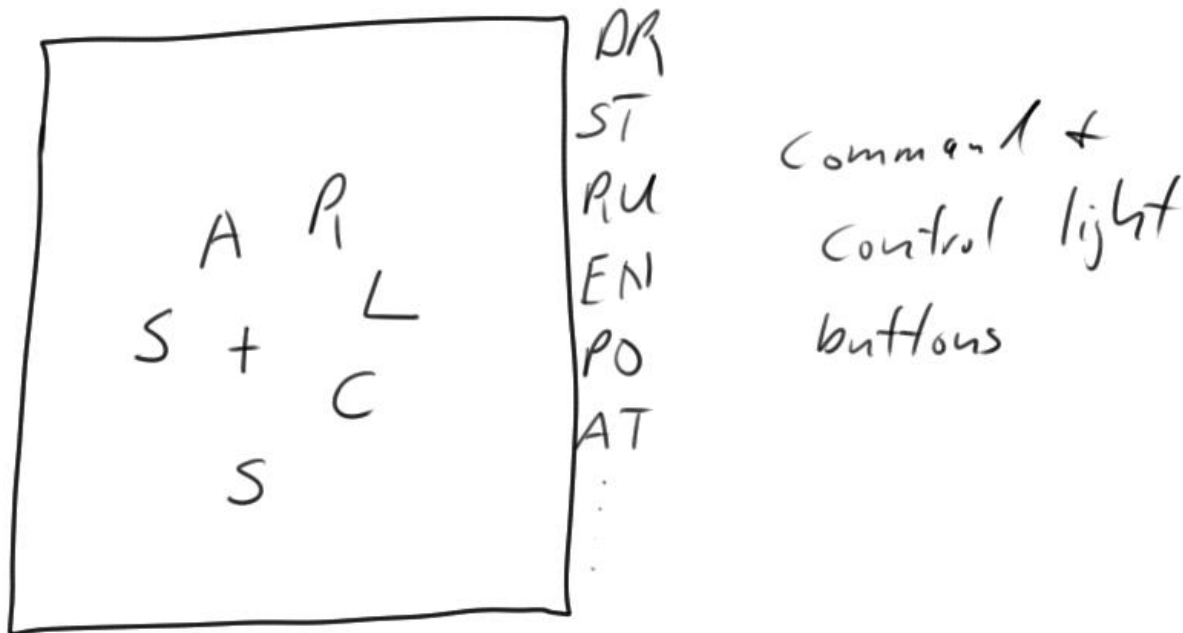
Control lightbuttons:

These vary according to the command mode currently selected. In drawing mode they are:

- S Start to draw under horizontal-vertical constraints from the + position
- L Start to draw rubber band line at current + position
- F Finish drawing at the current + position
- W, X, Y ...Select a symbol from the catalogue of defined symbols and attach to the drawing at the current + Position

## Figure

The following is a free-hand copy that I made of a figure accompanying the above notes:



While not a photocopy, it is close in style, and proportion, to the original hand-drawn figure by Wiseman. It is also very consistent (no surprise) with the figure in Newman and Sproull.

## Film

The most interesting thing is that the preceding notes and figure came from a hand-written script for a talk that Wiseman was going to give – more specifically – a talk that accompanied a film demonstration of PIXIE's user interface. What is of significance is that this lets us know that there was a film of the system, and based on this hand-written narration, it showed the radial menus in use.

Consequently, at the suggestion of the people manning the desk at the manuscript room at the library, I have contacted the Keeper of Manuscripts for the University Library, in an attempt to determine if a copy of the film was with Wiseman's effects, or if there is a copy known to exist and which is accessible. I have offered to have Microsoft cover the expenses of transferring the film, should it exist, into electronic form so as to be accessible to interested researchers.