

Focus + Context + Orientation with the Phaser Tool

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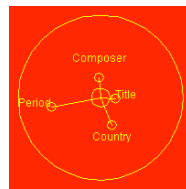
Orientation is a complement to Focus + Context: it allows users to orient a domain from their knowledge of that space, and thereby to re-contextualize a new or current focus from the perspective of that knowledge.

The Problem: Predetermined hierarchical organization of a domain forces a user to access that domain through one path only. That path itself may exclude the user from meaningful domain access.

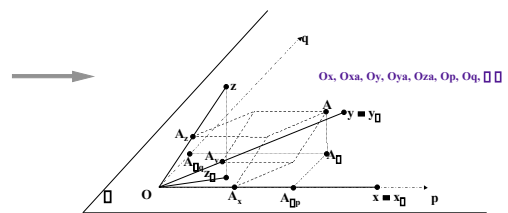
A Solution: In [2] schraefel proposed *orientation* as way to let users reorganize the dimensions of an information space dynamically to support access to a space from multiple perspectives in order to privilege what a user may already know about a domain.

An Implementation: In [1] Pacheco designed the Phaser Tool as a method to support orientation.

The Phaser Tool allows any axis of an n-dimensional space to be privileged by the user.



Phaser Tool Controller
Here the tool manages orientation for 4 dimensions in Classical Music Space: Composer, Period, Title, Country. The center circle represents a value of 0; the outer circle, 1.



The Phaser Tool:

The tool is designed to act as an orientation controller for any visualization of an organized information space.

In the examples presented here, we show a classical music space visualized (a) in clusters (b) in a linear sequence and (c) in a list view.

In each case the controller reorients which part of the domain is privileged, as well as which part of the domain is visible.

$$x = k \sum_{i=0}^n Value_i \cos(Phase_i)$$

$$y = k \sum_{i=0}^n Value_i \sin(Phase_i)$$

Module_i is the size of a spike, normalized in the [0, 1] interval. It is the projected attribute from the n-space onto the 2D space. In practice it is the attribute component "i" weight.

Value_i is the data value with respect to the attribute "i" in the "i" axis scale.

Interactive Orientation:

In the **First Orientation** (right, first row), the hierarchy is arranged to descend from Period, where Composers appear in their associated periods.

In the **Second Orientation** (right, second row), the user wishes to privilege Country of origin, then look at which periods are associated with these countries. To achieve the transition, the user decreases the value of Composer to 0 in the Phaser Tool, increases Country to 1, and then increases the value of Period from 0 to some value approaching 1.

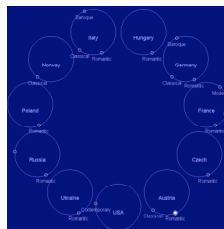
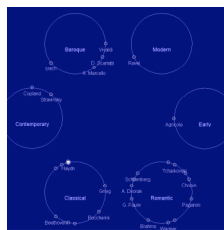
In the Clusters Visualization (a), the user has also zoomed out to see more of the area than that viewed in the First Orientation (above).

Reorienting dimensions

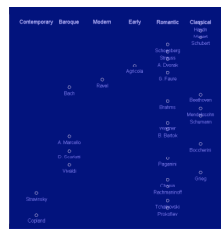
First Orientation
Period,
Composer

Second Orientation
Country,
Period

Visualization (a): Clusters



Visualization (b): Linear Sequence



Visualization (c): Lists



Primary Effects: The primary feature of Orientation is to allow a user to privilege their knowledge or preferences about an information space so that they can have better access to that domain. For instance, a user who may not know about Periods in Music but knows something about Instruments may wish to see a classical music space from the perspective of Instruments, then Composers, then Pieces rather than Period, Genre, Composer, etc. Orientation thereby lets users gain access to a space from their perspective of a domain.

Side Effects: In an evaluation of another project where the Phaser Tool was used to support the exploration of a Classical Music space, we saw users manipulate the site along various axes "just for the fun of it" [1]. Consequently, access to Orientation may also enhance serendipitous discovery of associations and paths through an information space that may not otherwise have been discovered.

References:

- Pacheco, Paulo. Information Retrieval with Audio Feedback from Multi-Dimensional Spaces. Masters Thesis, Dept. of Computer Science, U of Toronto, 2002.
- schraefel, m.c. mSpaces: Access to Information when Queries and Browsing Fail. mSpace Project Overview Paper, shaka.dgp.toronto.edu/mospace, 2000.