

The Digital Indexed Zuozhuan

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The Digital Indexed Zuozhuan (DIZZ) project is designed to facilitate reading and analysis of the Zuozhuan text by means of a system to be used in the Internet Network environment.

The system consists of a relational database and a Web interface to the user. It links Ruan Yuan's 1815 edition of the Zuozhuan (reprinted by OUP in 1898, and by Hong Kong UP in 1982, with James Legge's translation of it), to an index compiled by Sir Everard Fraser, revised by Sir James Lockhart and published in 1930, also by OUP. The index provides the English equivalents for most of the 3,790 net Chinese graphs used in the text, of which 1,214 register only one meaning each. The others share approximately 15,490 meanings, including titles and the names of persons and places in 180,014 occurrences. The index also provides page and column coordinates to the printed text. The published Fraser/Lockhart index arranges the graphs only by the 214 traditional radicals and residual strokes.

The Digital Indexed Zuozhuan project was conceived after years seeing students flee the daunting densities of the text's early Chinese and its annalistic structure dealing discontinuously with the many Zhou feudatory states and the multiplicity of their constantly changing actors. Thus, in the first instance, the *DIZZ* was conceived as an aid to the early reader of the *Zuozhuan* which, by lowering those hurdles, would bring the reader closer to the content of the text and thereby kindle some enthusiasm for it.

Fraser's index, though useful in mitigating some of the reader's difficulties also added to them. Though it provides page and column numbers (but no line coordinates), for many of the multiple occurrences of graphs, it does not provide

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them all. A query to the *DIZZ* reveals that more than half the total number of occurrences of graphs (93,073), are without response in English from the linked, digitized index. Granted, many of that number are graphs that appear over and over again (*et saepe* in Fraser's Latin), with little variation in meaning. Yue1 月 for example appears 3,973 times with almost no variation in meaning, but zhi4 之, which appears in 7,270 occurrences, has 9 variants, and zi3 子 appearing 4,593 times has 47 variants. Whether this was because Fraser felt that an alert reader, reading consecutively, would soon retain recurrent meanings or because OUP wanted to reduce the size of what was not likely to become a best seller, we may never know. But, there are some graphs he did record in almost all their occurrences and those were the names of the important states, doubtless with an eye to the researcher as well as the reader.

Upon completion of the project any Chinese graph can be clicked and its English equivalent in the given position made to appear in an adjoining window. As a research tool, that function can be turned into a request for all the occurrences of a selected graph, each occurrence listed may then be examined in context, or a number of graphs grouped conceptually as in a thesaurus or by subject can also be displayed in context.

The *DIZZ* works in two directions: from the text to the index and from the index to the text. Five means of entry are provided:

- 1) by page number (of the HKUP printing). Here page numbers of the published text lead to a non-searchable presentation of the printed page formatted in the traditional way in vertical columns, as most students meet it for the first time and most scholars become familiar with it. This is the presentation that provides the contextual response to queries from the Index. However, it is uncomfortable as a reading text. Shifting legible size text up and down on the monitor to get from the bottom of one column to the top of the next for continuous reading is dizzying and hard on the eyes. So a second non-searchable version,
- 2) Addressed by year of the Gregorian calendar, is formatted horizontally to be read from left to right from the top of the screen down, allowing the year to be read continuously by scrolling downward.
- 3) Yet a third presentation, presently still vertical and accessible by page number, is searchable. These rather ill-favored, heavily framed cells are at present our only way to make a graph into a click-able button that allows the reader to elicit a meaning and see it on the monitor in an adjoining window. As

soon as we can get rid of the heavy frames so as to click the character and get its English equivalent, we will convert the searchable text to horizontal by years and drop the non-searchable horizontal version.

However, if the reader wishes to see where else a graph appears or what alternate meanings there may be for a graph, or wants to know where others appear, the browser's <back> button leads to the home page for the fourth kind of search which is

4) by a specific graph. This search consists of eliciting the desired graph phonetically, in pinyin, from the Twinbridge system, inserting it into the appropriate box, clicking the <accept> button and then selecting the desired occurrence from a list, at which point the graph will appear highlighted in red in the non-searchable vertical presentation.//

For example Jin (晉) appears in 1,134 occurrences. On page 113 (the year –666), we find the first of a long series of entries concerning Jin (晉) here presenting the begats of 晉獻公, Duke Xian of Jin, 19th of his lineage. We find among his progeny his sons Shen Sheng (申生) the heir apparent, and the latter's half brothers Chong Er (重耳) the 24th ruler of Jin and Yi Wu (夷吾) the 22nd ruler. If we pursue all four to page 140, ten years later in –656, we find that Li Ji, the duke's favorite barbarian concubine has consummated her plot to discredit the heir apparent and his half brothers in favor of her own son Xiqi (奚齊). Shen Sheng has hanged himself and the other two have fled. This brings up the fifth method of searching the text, namely 5) by concept or subject.

Fraser's index never mentions suicide but there are at least 32 suicides in the text, rendered by five different graphs or digraphs. A query to the subject index for suicide will reveal all of these and their locations so they can be read in context. Only three suicides are rendered by zi4sha1 (自殺), the literal equivalent of suicide. The remaining twenty seven are divided among five other method specific terms. The most frequent is rendered by a single graph yi4 (縊) to strangle <oneself> most often by hanging, but can less frequently also mean to strangle another; the others require two graphs each, fu2jian4 (伏劍), to bow over ones two edged sword or cut one's throat; zi4ren4 (自刃) to kill oneself (with a sword), and without <self>, to sword another; zi4jing3 (自剄), ~~and zi4ne3~~ (throat 自圖) to destroy oneself, an unusual use of a graph more often meaning to plan, plot, or conspire. Despite his demise, the text is not finished with Shen Sheng. His ghost returns to demand the punishment of his half brother for moving Shen Sheng's grave. Ghosts, spirits and

dreams are intimately related in the *Zuozhuan*, and involve a number of different graphs. Ghosts are generally *gui* 鬼 and spirits, generally *shen* 神, the intelligent or evanescent aspect of the ghost, the one that floats heavenward and merits fragrant sacrifices, is *hun* 魂. But, the terrestrial aspect of the ghost, *po* 魄 is the one that hangs about taking revenge and making trouble for the living responsible for offenses to its deceased corporeal host. In the *Zuozhuan* all these are mediated in human experience by dreams, following the strict Confucian view of the matter. Therefore ghosts, spirits and dreams appear together as a subject.

The database containing the full text of the *Zuozhuan* and of the *Index* now resides centralized in a server of the Colegio de Mexico's local network. It was developed by means of an administrator capable of handling client-server architecture, a *Microsoft SQL* server for *Windows NT*. Under this scheme concurrent queries to the database may be made from any node of the *Internet Network*. The interface to the user is constructed in the shape of documents and forms written in *Hyper-Text Markup Language (HTML)*. These may be displayed on the monitor by means of browsers, *Netscape* or *Internet Explorer*, on the *Web*.

DIZZ utilizes the component of the *Microsoft Internet Information Server* called *Microsoft Internet Database Connector (IDC)* to execute queries to the database and receives the results in the form of an *HTML*. Representation of Chinese graphs appearing in the *Web* pages is executed by *Twin-Bridge System 4.0* Chinese software in the *Windows 95* environment.

The database presently includes 4 main tables containing the following information:

- 1) *Fraser/Lockhart Chinese entry graphs*: contains a row for every entry graph, including phonetic value in Wade-Giles transliteration, entry number, BIG5 code, *Pinyin* transliteration and BIG5 code for the radical, and number of additional strokes.
- 2) *English equivalents*: contains a row for every meaning of every Chinese graph in the *Zuozhuan* text recorded by Fraser and Lockhart.
- 3) *Pointers from the Index to the Zuozhuan text*: contains a row for every Chinese graph in the text recorded by Fraser and Lockhart. Each row contains the page, column and line location of a graph in the Legge edition of the text, and relates the meanings of the graphs contained in the index with the graphs in the *Zuozhuan* text.
4. *Zuozhuan text*: contains a row for every occurrence of a Chinese graph in the text, its complete location, i.e. page, column and line, augmented by punctuation

indicators (if any) following a graph, the consecutive year of the incumbent ruler, the corresponding year of the Gregorian calendar and the state referred to.

The *DIZZ Web* interface includes procedures to query the database, display retrieved information and allow the following functions:

1. Display of a given page of the *Zuozhuan* text by number
2. Display of English meanings recorded for a given Chinese graph. Selection of any one of these meanings will display the locations in which the given graph has that meaning, as well as the appropriate page of the text and the appropriate column highlighted
3. Display of a page of *Zuozhuan* text in which a graph may be chosen and its meaning in context as recorded at that location displayed in an accompanying window.

We are developing new interface modules to execute the following functions:

1. Completion and precision of the Fraser/Lockhart references to the text.
2. Display of meanings for strings of graphs
3. Representation of the text by year and by state
4. Reorganization of meanings to create a macro-structure that will represent a subject index

The final version of the *DIZZ* will present the reader with a single searchable text formatted horizontally and arranged by Gregorian calendar years/Consecutive years of incumbent rulers of Lu. The Chinese graphs will not be outlined and one, two, three or four graphs may be highlighted for recovery of information and meaning.

Buttons beneath the text will permit lateral movement to

- 1) the general index (where there will be a return button to the text);
- 2) the subject index (also supplied with a return button);
- 3) another year
- 4) the home page.