psbao

Typesetting Bao Diagrams with PSTricks

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October, 2008

Introduction

THIS PACKAGE provides functionality to typeset Bao diagrams in LATEX 2_ε. It has been created using the Go package written by Victor Bos (September 4, 2008) as basis and it is built on top of the PSTricks package.

To all the people who have never played bao I suggest to visit *http://www. swahili.it/bao*.

Download and installation

THE psbao package can be found at CTAN (mirrors) in the directory graphics/pstricks/contrib/psbao/.
It is also available from http://www.vessella.it/ghala/.

To install the package, download the files psbao.sty and psbaomanual.tex and put them in a directory where LATEX can find them. After that, test the installation by running LATEX on psbaomanual.tex.

Note that psbao uses pstricks to draw graphics. Therefore, the same things that apply to viewing and printing documents with pstricks graphics also apply to documents with psbao graphics. In particular, it is usually better to use a PostScript viewer (e.g., gv or gsview) instead of a DVI viewer (like xdvi or yap).

Bao boards

THE interface of psbao is based on the notation used in http://www.swahili.it/bao/. That is, the rows of the 4×8 board are indexed by $1, 2, \ldots, 8$ and the columns are indexed by b, a, A, B.

First of all it must be set the initial position of a Bao game. For the standard initial setting is used the command \initbao, but the board is showed by the environmnet \begin{showbaoboard} ... \end{showbaoboard} (Figure 1):

Code:

Prints:

```
\initbao
\begin{figure}
 \begin{center}
  \begin{showbaoboard}
  \end{showbaoboard}
  \caption{...}
  \label{fig:...}
 \end{center}
\end{figure}
```
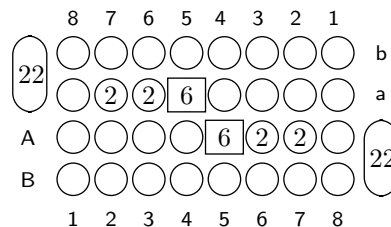

Figure 1: Setting up the standard initial situation: default size 0.6cm

For the initial setting of the beginner's variant *Bao la kujifunza* is used the command \initjbao (Figure 2):

Code: Prints:

```
\initjbao
\begin{figure}
 \begin{center}
  \begin{showbaoboard}
  \end{showbaoboard}
  \caption{...}
  \label{fig:...}
 \end{center}
\end{figure}
```
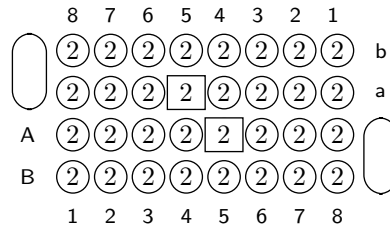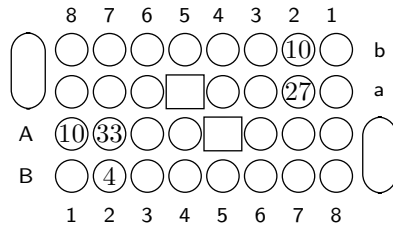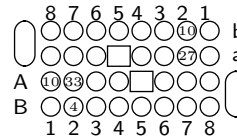

Figure 2: Bao la kujifunza

The default horizontal unit distance is 0.6cm. The vertical unit distance is computed by the psbao package. To re-size a Bao board, the command \setbaounit can be used. This command takes the desired horizontal unit distance as an argument. It is not advisable, though possible, to set the unit distance to a value less than 0.3cm, see Figure 3(b).

(a) Horizontal step 0.5cm.   (b) Horizontal step 0.3cm.

Figure 3: Resized Bao boards

For the diagrams in this document we have set the horizontal unit distance to 0.5cm (\setbaounit{0.5cm}).

Seeds and situations

THE COMMAND to put seeds into the holes is \weka which takes three parameters: the number of seeds, the row and the column of the hole. For example, \weka{2}{a}{4} puts two seeds into the hole at position $(a, 4)$. The \weka command can be used to modify a previous situation. For instance, the situation of Figure 4 is defined as follows.

The same situation can be set by \initbao which takes one optional parameter to indicate the number of seeds contained in all holes (Figure 5).

To put seeds into the stores is used the same command: \weka. In this case instead of index of the row can be used the letters s or S for the south store,

Code:

Prints:

```
\weka{1}{b}{2} % 3,0
\weka{2}{a}{2} % 2,1
\weka{3}{A}{2} % 1,2
\weka{4}{B}{2} % 0,3
\weka{5}{A}{1}
\weka{9}{A}{3}
\begin{showbaoboard}
\end{showbaoboard}
```
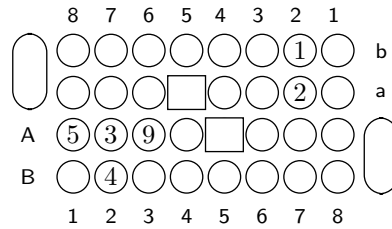

Figure 4: Example of weka

Code:

Prints:

```
\initbao[0,%
        0,0,0,0,0,0,1,0,%
        0,0,0,0,0,0,1,0,%
        5,3,0,0,0,0,0,0,%
        0,3,9,0,0,0,0,0,%
        0]
\begin{figure}
\begin{center}
 \begin{showbaoboard}
 \end{showbaoboard}
\end{center}
\end{figure}
```
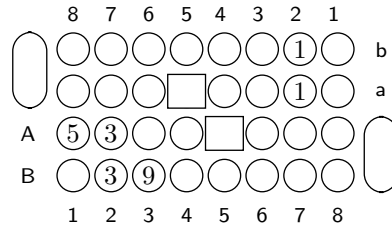

Figure 5: Writing the number of seeds of all holes

and the letters n or N. For example, \weka{2}{s}{4} puts two seeds into the store of South. The third parameter must be any number.

Code:

Prints:

```
\begin{showbaoboard}
\weka{10}{n}{2}
\weka{1}{b}{2}
\weka{2}{a}{2}
\weka{3}{A}{2}
\weka{4}{B}{2}
\weka{5}{A}{1}
\weka{9}{A}{3}
\weka{9}{s}{3}
\end{showbaoboard}
```
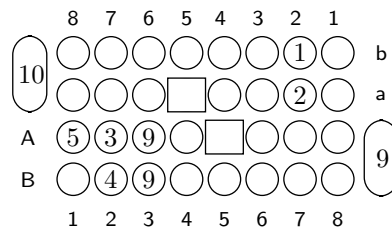

Figure 6: Setting up a situation with stores

The command: \weka keeps the previous situation, so if it is necessary to

set a completely new situation it must be used the command `\initbao`.

Move directions

To indicate the direction of move it is possible to use the command `\markpos`, which takes three parameters: the direction marker, the column, and the row. For example, the move a3< is shown on the diagram by `\markpos{marksx}{a}{3}` and A3> is shown on the diagram by `\markpos{markdx}{A}{3}`:

Code:

```
\weka{10}{n}{2}
\weka{3}{a}{3}
\weka{3}{A}{3}
\weka{9}{s}{3}
\begin{showbaoboard}
 \markpos{\marksx}{a}{3}
\end{showbaoboard}
```
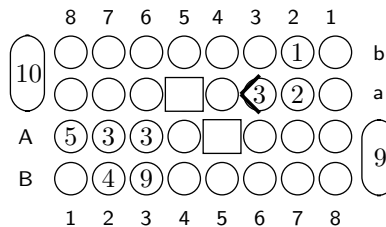
Prints:

Figure 7: The move a3<

Code:

```
\weka{10}{n}{2}
\weka{3}{a}{3}
\weka{3}{A}{3}
\weka{9}{s}{3}
\begin{showbaoboard}
 \markpos{\markdx}{A}{3}
\end{showbaoboard}
```
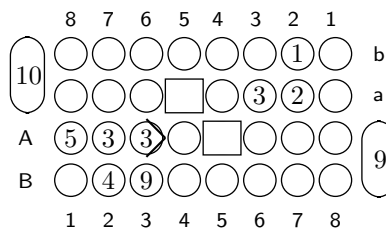
Prints:

Figure 8: The move A3>

Markers

A HOLE on the board can be marked with the command `\markpos`. This command takes three parameters: the marker, the column, and the row. Available markers and the commands to generate them are listed in Table 1.

Note that to mark a non-empty hole the command `\weka` has to be used together with marker command, `\markpos`.

Note, also, that the special holes (as *kichwa* or *kimbi*) can be used the marks `\markdd` or `\markss`, indifferently (but consistently!). Those commands must be inside the environment `\begin{showboard}` *dots* `\end{showboard}`.

Diagram	Mark	Description	Command
(board diagram)	\marksx	a2<	\markpos{\marksx}{a}{2}
(board diagram)	\markdx	A3>	\markpos{\markdx}{A}{3}
(board diagram)	\markss	Special hole	\markpos{\markss}{a}{2}
(board diagram)	\markdd	Special hole	\markpos{\markdd}{A}{1}
(board diagram)	\markma	Any nr of seeds	\markpos{\markma}{A}{5}

Table 1: Markers on holes