

Bracken (after Christian Wolff) (2014)
For five or more people with computer direction
Nicolas Collins

Bracken adapts the language of circuits and software for interpretation by any instrument. A computer generates and projects a live streaming score that directs the players to interact with one another following rules derived from binary logic and various methods of analog and digital signal processing. These instructions are represented by two sets of shorthand symbols:

GROUP COORDINATIONS

xor	play only when no one else is playing
&	everyone play at together
1shot	short events triggered by one player (cluster, break shot)
loop	repeat phrase, rhythmically independent of other players
loop+/-	repeat phrase, add or subtract events as you repeat, rhythmically independent of other players
accel	speed up
decel	slow down
<	crescendo, over entire interval
>	decrescendo, over entire interval
1, 2, 3 etc.	each player play that number of discrete events in time bracket

INDIVIDUAL INSTRUCTIONS

*	noisy, distorted
~	clear pitch
chord	chord or cluster
gliss	glissando
+/-	detuning
hi	highest possible pitch
lo	lowest possible pitch
duck	stop as soon as someone else starts
gate	start as soon as someone else starts, stop when they stop
eq	change timbre, tone, filtering
©	copy/mimic someone else as exactly as possible
@	change location (pan, walk)

The “Group Coordinations” instruct the players to interact with one another in specific ways, while the “Individual Instructions” describe sonic characteristics or performance techniques that can be followed by each player independently.

The computer randomly shuffles through these symbol sets, projecting up to five at a time onto a screen that can be seen by the players (and probably the audience as well). The Group Coordinations appear in a larger font in the center of the screen, while the smaller Individual Instructions are clustered around the edges. A time bracket is displayed under each symbol, indicating the seconds remaining during which the symbol can be articulated; at the end of this interval a new symbol appears.

Each player must follow the Group Coordination in the center. She/he can perform any of the surrounding Individual Instructions, in any order, at any time within the available time brackets.

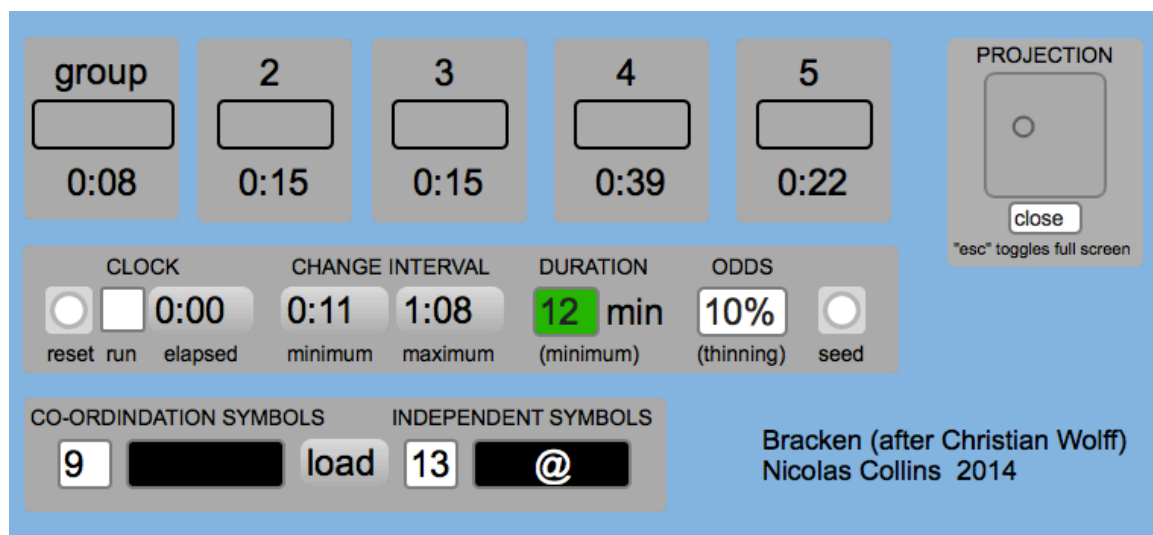
The instrumentation of *Bracken* is open. A minimum of five players must be present. The score does not specify absolute or relative pitch, so this work can be played by non-traditional instruments, such as electronic circuits or contact-miked household objects, as long as they are “performable” enough to satisfy the requirements of the notated interactions.

This notation owes a great debt to Christian Wolff’s “co-ordination” scores of the early 1960s, whose techniques presaged key traits of subsequent electronic and computer music.

SOFTWARE SETUP

The software is delivered as a MaxPlay application. The “Bracken” folder contains both the program (with a name like “bracken.app”) and a file of settings (“brackensettings.json”). Make sure both files remain in the same folder, which can be located anywhere on your computer. No audio connection is needed, but some form of remote video projector or large monitor is needed for the performers to follow. Use your computer’s System Preferences to insure that the remote display is not set to “mirror mode”, since different software panels appear on the computer and the remote screen.

Double-click the .app and you should see a window that looks something like this:



The five blocks in the upper left of the screen indicate the status of the five notation cells that appear in the projected score. The leftmost block controls the

central **Group Coordination** cell, while the four to the right control the surrounding **Individual Instructions** cells. The central box in each block displays the current symbol in that cell. The numeric display below the symbol counts down the remaining time until the next change (time bracket).

The horizontal panel below the cell blocks controls the timing of the performance. Click the **run** box under **CLOCK** at the left to start the performance; click again to pause. The **elapsed** time is indicated in the number box. **Reset** resets the counter to zero and clears all symbols to blank (silence.)

Click and drag the numbers in the **CHANGE INTERVAL** boxes to set the **minimum** and **maximum** duration of the time between changes in performance instructions. Whenever a timer reaches zero (as displayed in the cell blocks above) the program will randomly choose a new duration within the **minimum** and **maximum** values set here, and select the next symbol for that cell.

Pull down the **DURATION** menu to select the minimum duration of the performance. When the **elapsed** time reaches this value the **DURATION** menu background changes from green to red and the program starts to clear the instructions as each one times out. The projected symbols also change from white to red as a cue that things are wrapping up. The shutdown process can take a few minutes to complete, and the actual performance duration can be as long as this **DURATION** time plus the time set as **maximum** in the **CHANGE INTERVAL** control box.

The **ODDS** menu sets the odds that any of the Individual Instruction will be blanked out for any time bracket. Use this to control the relative density of instructions that appear on the screen at any one time. 50% is a good start value; 10% yields a denser instruction set.

The **seed** button randomly assigns a symbol to each cell, if necessary (values are automatically assigned when the program starts to run.)

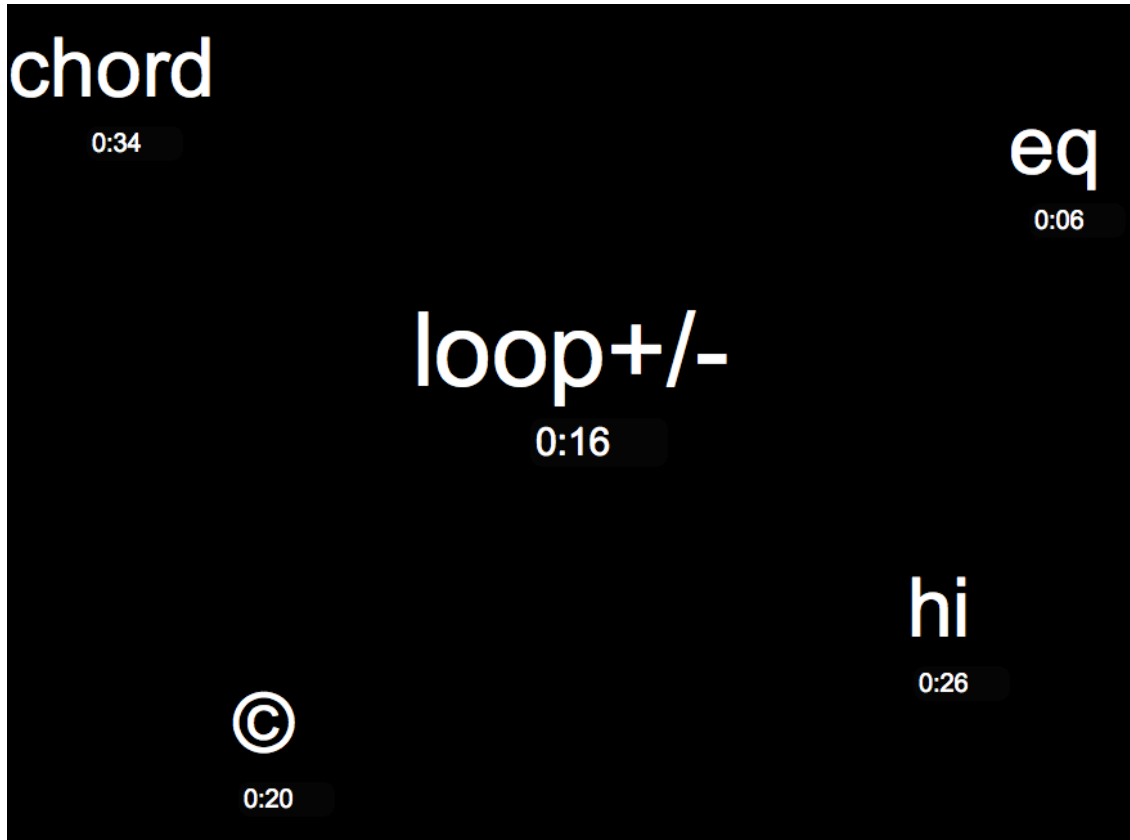
This is the main panel for setting the score characteristics, typically before starting the performance. It should not be necessary to adjust these settings during the performance. Any changes made to the values in this panel are saved when you exit the program and restored when you start up again.

The **SYMBOLS** panel at the bottom of the main screen holds and distributes the symbol sets for the score, and is typically not needed by end-users of the program. The two black menus list the available symbols. If for any reason the remote score is not displaying symbols correctly click the **load** button in the center of this panel.

The **PROJECTION** panel controls the **REMOTE DISPLAY** that directs the musicians. Toggle the **close/open** button to open the remote display. Drag this new window across the desktop to the projector screen. The "escape" key on your computer toggles full-screen mode on and off for the remote display. The

circle in the square under the **position** legend can be clicked and moved to center the remote display on the projector screen.

The **REMOTE DISPLAY** looks something like this when the program is running:



Each notational cell appears in white against a black background. The smaller number below the symbol counts down the time remaining to the next change of symbol. The symbol and the counter fade to black during the last five seconds before the change. Occasionally a cell disappears for a time bracket – this is not an error, but is used to vary the density of the performance. The usual **CMD+** and **CMD-** key combinations change the size of the **REMOTE DISPLAY**.

The simplest solution to conveying the instructions to the players is to connect the computer's video output to a data projector, and position the screen so it is visible to all the musicians (and probably the audience as well.) Alternatively one can split the video output to multiple monitors placed strategically in front of the players.

PERFORMANCE

Prior to performing the group sets the total duration and minimum and maximum values of time brackets. Confirm that the video display is working and visible to the musicians. Toggle **run** to start the performance.

Each player must follow the **Group Coordination** in the center of the display whenever the necessary conditions are met. I.e., play only when no-one else is playing (**xor**); repeat a phrase and add a note with each repetition (**loop+/-**); play a group groove (**&**). One can also choose not to play during its time interval, and remain silent instead. The **loops** need not be synchronized rhythmically amongst players.

Any number of **Individual Instructions** can be applied to the execution of the current **Group Coordination**, in any order, at any time within their available time brackets. For example: play a high note (**hi**) as a short response to another player (**1shot**); play a note, walk across the stage (**@**) and play a second note (**2**).

If no symbols are displayed and the screen is black remain silent until a new symbol appears. This could make the audience very nervous.

The time bracket represents the maximum duration of any instruction. It is not necessary or desirable to play for the entirety of the symbol's time bracket.

It is very important that the player perform inventively within the boundaries of the notation, rather than merely satisfying the "rules of engagement." This is not a driver's test but an occasion for expressive improvisation within specific constraints.

It is advantageous for each musician to familiarize her/himself with the notational symbols and their potential interaction prior to group rehearsals. May of the instructions, however, can only be tested in the context of the full group.

The performance ends when the last symbol fades to black and the **CLOCK** shuts off (typically c. **DURATION** + **maximum**.)

West Falmouth August 2014

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