This project aims for students who take Afro-Latin Ensemble (Music 281) to have the ability to practice and learn rhythms outside of class. Afro-Latin Ensemble teaches the music, mostly drum-based, of percussion ensembles from different parts of Latin America. Because of the fragility of the instruments used in this course, they are not available full-time outside of class. So, this project’s goal was to create an application that students can use on their computer (or a computer in the Music Library) to learn the rhythms that are taught in this class. The application needed to have the following features: the ability to mute any drum in a rhythm (so that students could listen to the relationship between two or three drums), the ability to play the rhythm at a regular tempo and a slower tempo, the ability to visually see the rhythm, the ability to play along as any one of the instruments in that particular rhythm, the ability to practice one section (either the call, the main rhythm, or a variant part of the rhythm) by looping that section, and the ability to randomly generate variations in the rhythm.

The beginning of the summer consisted of obtaining and creating audio samples of the individual drum hits of each drum used in the class. Simultaneously, I began to learn the basics of the programming language that would be used: Max MSP. Max MSP is a unique type of language that is used mostly for audio and visual purposes. Rather than type out lines of code, Max MSP has objects that can be dragged and dropped onto a window and connected to interact with each other. Some objects are buttons that, when clicked, send a trigger to another object. Other objects send messages either to Max itself or to other objects.

Once all the drum hits were obtained and the language was learned, the next step was to program one rhythm, in order to test and perfect the display so that it was easy for a student to follow along. It was decided to start off with a certain genre (or ensemble) of drums, known as the Batá. This first ensemble, consists of three similarly shaped, double-headed drums of varying size. Of the rhythms to be played, one of these drums would have a maximum of four different kinds of hits, which made them slightly easier to program. The audio component of the rhythm consisted of making many drum sequencers that would each play one kind of drum hit for each drum. The rhythms were stored in an object known as pattrstorage in Max MSP. Programming in each individual rhythm, beat by beat, gives both the programmer and the student the greatest amount of control over the rhythm. The visual component of the rhythm was a bit trickier. Knowing how to read music is not a requirement of Music 281 so a different and comprehensive means of displaying the rhythms was required. The checked-box format chosen allows for students to follow along and play a hit only when a box is marked with an “X.” The student sees one bar of music at a time when the rhythm is playing. Other display needs consisted of highlighting variations in the rhythm and displaying the full rhythm on the screen.

Once the display and first song was complete, I used that as a template for all the other songs within the Batá rhythm. Moving on to the next ensemble (called Tambora), a few slight changes were made to the display, but the main elements remained the same. Because of the unique nature of each rhythm and ensemble, each rhythm must be programmed in beat by beat with its own unique audio and visual display.

The next step is to continue to program in as many rhythms as possible. In a year, the application will be made available to students who take Music 281. The first class will be used to improve the display and add more rhythms, as we receive student feedback.

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