Affra introduces Qiana to the note. Qiana then proceeds to get acquainted with commands to play and rest the note, commands to change the note’s pitch, and commands to change the note’s duration. In short, Qiana learns the basic vocabulary for rendering and manipulating the note.

Qiana: OK. So, I’ve started MxM again. What should I do now?

Affra: Perhaps you should begin by simply getting acquainted with the note, and the most basic note manipulation commands.

Qiana: The note?

Affra: Yes. The programming language Clay can be viewed as a note manipulation language. At first it is best to think of there being just one note, the note.

Qiana: OK. So, there is the note. What can I do with it?

Affra: For one thing, you can play it. Try typing ⊿P▷ into the text input box – followed by the Return/Enter key, of course. You should hear a note being played! If you do not, you should investigate the state of your machine with respect to sound.

Qiana: Yes. I heard a note, a not particularly pleasant note. It sounded kind of like a piano key being played.

Affra: Yes, indeed! The note has a number of properties. (Pleasantness is not necessarily one of them.) Well over a dozen properties, actually. The most salient of the properties are pitch, duration, timbre, and volume. By default, these properties are instantiated as follows: pitch is Middle-C; duration is 1 beat; timbre is something like the sound of a piano; volume is “medium”.

Affra: Now try typing ⊿P P P P P▷ into the text input box.

Affra: Now typing ⊿P R P R P▷ into the TIB.

Qiana: R for rest?

Affra: Exactly!

Qiana: What if I want to change the pitch of the note?

Affra: Use the raise pitch command, RP, and the lower pitch command, LP. To get a feel for how these commands work, type ⊿P RP P LP P▷ into the TIB. Then type ⊿P LP P RP P▷ into the TIB.
Qiana: Interesting.

Affra: Actually, it may be a bit more interesting than you might realize. Another property of the note is the alphabet associated with a note. An alphabet is a sort of generalized scale. You can think of an alphabet as a key, or pitch class, together with a mode, or sequence of intervals. By default, the alphabet of the note is the C-major scale, whose key is C and whose intervalic sequence is WWHWWWH – where W denotes a whole step (a two key interval on the piano) and H denotes a half step (a one key interval on the piano). Try typing ▷P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP P RP. (That is, eight play commands separated by the raise pitch command.) You should hear the C-major scale, rising. To hear it falling, type ▷P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP P LP. (That is, eight play commands separated by the lower pitch command.)

Qiana: And you can change the alphabet?

Affra: Of course! But that’s another story.

Qiana: What alphabets are available?

Affra: Yet another, rather long story!

Qiana: And duration. How can I change the duration of the note?

Affra: With the duration changing commands, of course. The command X2 expands the duration of the note by a factor of 2. The inverse command is S2. If you are not sure what this means, simply type ▷P P X2 P P S2 P P S2 P P X2 P P S2 P P X2 P P S2 P P X2 P P X2 P P S2 P P S2 P P into the TIB and you will get the picture.

Qiana: Got it. What about threes?

Affra: Threes. Fives. Sevens. The commands X3, X5, and X7 expand the duration of the note by factors of 3, 5, and 7. S3, S5, and S7 are the inverse command.

Qiana: So if I type ▷P S3 P P P X3 P S3 P P X3 P P S3 P P X3 P P I will hear something like the rhythm from Ravel’s famous Bolero?

Affra: Try it and see!

Qiana: Yes!

Affra: One of the nice things about MxM is that you can try your hand at making music, even if you have no instrumental or vocal skills!

Qiana: Very cool! Are the other “prime” duration changing operations useful?
Affra: Absolutely! But, as a rule, the smaller the prime number in the duration changers, the more often the operator will find use.