Quantum Leap RA Virtual Instrument

Users' Manual

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PLAY

1. Welcome

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Welcome

About EastWest

EastWest (www.soundsonline.com) has been dedicated to perpetual innovation and uncompromising quality, setting the industry standard as the most critically acclaimed producer of Sample CDs and Virtual (software) Instruments.

Founder and producer Doug Rogers has over 30 years experience in the audio industry and is the recipient of many recording industry awards including "Recording Engineer of the Year." In 2005, "The Art of Digital Music" named him one of "56 Visionary Artists & Insiders" in the book of the same name. In 1988, he founded EastWest, the most critically acclaimed sound developer in the world, and recipient of over 50 industry awards, more than any other sound developer. His uncompromising approach to quality, and innovative ideas have enabled EastWest to lead the sound-ware business for 20 years.

In 1997 Rogers partnered with producer/composer Nick Phoenix and set up Quantum Leap, a wholly owned division of EastWest, to produce high-quality, no-compromise sample libraries and virtual instruments. Quantum Leap virtual instruments are mostly produced by Nick Phoenix. Some of the larger productions, such as Symphonic Orchestra, Symphonic Choirs and Quantum Leap Pianos are co-produced by Doug Rogers and Nick Phoenix. As a composer, Phoenix began scoring film trailers and television commercials in 1994. To date, he has either scored or licensed music for the ad campaigns of over 1000 major motion pictures including Tomb Raider 2, Terminator 3, Lord of the Rings Return of the King, Harry Potter 2, Star Wars Episode 2, Spiderman 3, Pirates of the Caribbean 3, Blood Diamond, Night at the Museum, and The Da Vinci Code. Quantum Leap has now firmly established itself as one of the world's top producers of high-end sample libraries and virtual instruments.

In 2006, EastWest purchased the legendary Cello Studios (formerly United Western Recorders) on Sunset Boulevard in Hollywood, re-naming it EastWest Studios. The 21,000 sq. ft. facility, since remodelled by master designer Philippe Starck, houses five recording studios and is the world headquarters for EastWest.

Producer: Nick Phoenix

Nick began scoring film trailers and television commercials in 1994. To date, he has either scored or licensed music for the ad campaigns of over 1000 major motion pictures. "Star Trek," "Harry Potter 6," "Tales of Despereaux," "The Dark Knight," "Valkyrie," "The Hulk," "Rendition," "Spider-Man 3," "Golden Compass." "The Assassination of Jesse James," "Pirates of the Caribbean 3," "Babel," "Hitman," "I Am Legend," "300," "No Country For Old Men," "Harry Potter 5," "The Brave One," "Wall-E," "Blood Diamond," "Speed Racer," and "Night at the Museum" are a few recent examples. Nick and Thomas Bergersen founded the ultimate trailer music company "Two Steps From Hell" in 2006. www.twostepsfromhell.com.

Nick has also scored numerous TV shows for NBC, CBS, Showtime, and Fox.

The journey as a composer has also inspired Nick to record and program his own sounds and samples. Nick founded Quantum Leap Productions in 1997 and Quantum Leap has since grown to be the world's top producer of high-end virtual instruments. A 10-year partnership with Doug Rogers and East West has yielded countless award winning software titles such as Stormdrum, Symphonic Orchestra, Symphonic Choirs, RA, Voices of Passion, Ministry of Rock, Gypsy, QL Pianos, VOTA, QL Brass, QL Guitar and Bass, Hardcore Bass, Goliath, and Colossus.

Nick's studio is located in Venice, California, and is 100% solar powered.

www.nickphoenix.com

Credits

Producers

Nick Phoenix, Tony Austin, and Pacemaker

Executive Producer

Doug Rogers

Engineering and Mastering

Nick Phoenix

Programming

Pacemaker, Jared Selter, Tony Austin, Justin Harris, and Nick Phoenix

Editing

Pacemaker, Tony Austin, Jared Selter, Justin Harris, Jonathan Marmor, Arne Schulze, Claudia Phoenix, Nick Phoenix, and James Rickabaugh

Art Direction

Steven Gilmore and Doug Rogers

Photography

Claudia Phoenix and Tony Austin

Software

Doug Rogers, Nick Phoenix, Klaus Voltmer, Klaus Lebkucher, Patrick Stinson, Stefan Kersten, Toine Diepstraten, Thomas Merkle, Ezra Buchla, David Kendall, Nick Cardinal, and Jonathan Kranz

Manual

John Philpit, Claudia Phoenix, Nick Phoenix, Doug Rogers, Pacemaker, and Tony Austin

Special Thanks

Ocean Way Studio and the artists

How to Use This and the Other Manuals

All documentation for the EastWest PLAY Advanced Sample System and its libraries is provided as a collection of Adobe Acrobat files, also called PDFs. They can be viewed on the computer screen or printed to paper.

Each time you install one of the PLAY System libraries, two manuals are copied to the file system on your computer:

- The manual that describes the whole PLAY System. This, the largest of the manuals, addresses how to install and use all aspects of the software that are common to all libraries.
- The library-specific manual, such as the one you are currently reading. This smaller document describes aspects that differ from one library to the next, such as the list of included instruments and articulations.

Using the Adobe Acrobat Features

By opening the Bookmarks pane along the left edge of the Adobe Acrobat Reader, the user can jump directly to a topic from the section names. Note that some older versions of Acrobat Reader might not support all these features. The latest Acrobat Reader can be downloaded and installed at no cost from the Adobe web site. (As an example of a hyperlink, you can click on the last word of the previous sentence to be taken directly to the Adobe site.)

When reading this and other manuals on the computer screen, you can zoom in to see more detail in the images or zoom out to see more of the page at once. If an included picture of the user interface, or a diagram, seems fuzzy or illegible, then zoom in using one of several means provided in the Acrobat Reader software. Note that images are clearest and screen shots most legible at 200% and next best at 100%.

The Master Navigation Document

Because the EastWest PLAY System is a collection of components, each with its own User's Manual, a Master Navigation Document (MND) is provided to allow users to jump quickly between these PDFs when being read on the computer screen. This MND is a one-page file with hyperlinks to the PLAY System documentation and to all the library manuals. Hyperlinks to this Master Navigation Document are found on the title page of each chapter in each document. From there, you can open any other document in the collection.

For example, if you're reading something in this documentation for the Quantum Leap Gypsy library, and need to open the manual for the PLAY System as well, go to any chapter title page and click on the link that says, "Click on this text to open the Master Navigation Document." It will open in a new window on the screen. In that document, click on the icon for the PLAY System and its manual will open in the same window (hiding the MND). You now have both the Gypsy library manual and the PLAY System manual open in separate windows so you can refer to them both.

Online Documentation and Other Resources

For the most up to date information, visit the support pages at EastWest's web site. There you can find:

- information made available after these manuals were written
- FAQ pages that may already list answers to questions you have
- suggestions from EastWest and other users of the EastWest PLAY System
- news about upcoming releases

The address is:

http://support.soundsonline.com

You can also visit the EastWest online forums. There you can read comments and questions from others who use EastWest products and post your own. The many forum participants are a good source of helpful information about both the technical and musical aspects of this software.

The address of the forums is:

http://www.soundsonline-forums.com

PLAY

2. Quantum Leap RA, An Overview

Click on this text to open the Master Navigation Document

Quantum Leap RA, An Overview

The Design Point For the RA Library

In ancient Egypt, RA was regarded as the creator of everything, the god of the sun. RA is usually represented with the body of a man and the head of a hawk, holding an ankh and scepter. The chief location of RA worship was Heliopolis (a Greek word meaning city of the sun). We thought RA would be an appropriate name for the largest, and most comprehensive rare and ethnic virtual instrument ever made.

RA was born a few years ago, as a sample library called "Rare Instruments." All of the sounds from Rare Instruments are included in RA, but this represents approximately one-tenth of the content. We recorded the other ninety percent of RA at Ocean Way Studios in Hollywood. Because of the size and complexity of the project, we brought in two talented producers, Pacemaker and Tony Austin as co-producers. They have worked on other Quantum Leap projects and had some great ideas for RA. We spent time hunting down the best ethnic artists on the West Coast. Los Angeles is so ethnically diverse and blessed with excellent institutions like Cal Arts, it is actually the ideal place to record a rare and ethnic collection. The result of this effort was the original Quantum Leap RA.

Once EastWest created the PLAY System with its advanced sample-playback engine, it was only natural to recreate RA within that new environment. This new version offers the exact same set of rare and ethnic instruments as the older version, but now part of the growing set of libraries available within the PLAY System.

RA is a 13 Gigabyte virtual instrument that covers many typical, and some unusual instruments, from diverse parts of the World: Africa, the Americas, Australia, Europe, the Far East, India, the Middle East, and the Turkish Empire.

So what is so special about RA compared to other ethnic collections? For a start, I think you will really love these sounds for the same reason that Rare Instruments was so popular: every instrument or ensemble was sampled extensively, so the character of the instrument was preserved. Ethnic (or world) music is all about expression and how the instrument is played. To sample a Turkish wind instrument and not capture the bending, swelling and wavering of the notes is to miss the point completely. We made a big effort to keep things very organized, consistent and intuitive, which is necessary with a collection of this size. Every instrument has many articulations and effects that range from very controlled, to very expressive. This allows you to actually "play" the instrument with authentic results. We also came up with some innovative ideas for achieving realistic legato, which we call QLegato.™

You will find RA has amazing sound quality. This is the famous Ocean Way sound: an amazing collection of vintage mics and a custom API console. RA was captured with a phase-accurate 8-mic setup that gives a complete 3 dimensional image of the instrument. It is this type of sound that takes to artificial or sampled reverb extremely well. The sound is clear and broad. Mics used were Neumann U67 (U47s as alternates), Neuman M50, AKG C12 and Shoepps.

Another cool aspect of this virtual instrument is the fact that we recorded ethnic ensembles. This was done with African drums, bagpipes, gamelan and a Middle Eastern string section. The sound of these ensembles cannot be realistically simulated by layering solo instruments.

RA was a very expensive project, but well worth the cost. A lot of thought went into selecting instruments that would appeal to composers of all types, from dance music, to film. You might want to put the middle eastern string section in your next pop tune, or the hardanger fiddle in a sweeping romantic score, à la Lord of the Rings.

You might also be surprised at how little percussion is included in this giant ethnic collection. The reason: we already covered much of the world's diverse ethnic percussion in Quantum Leap Stormdrum—and even more so in the follow-up product, Storndrum 2. Both RA and Stormdrum 2 are PLAY libraries, so they can be mixed in the a single instance of PLAY, resulting in a seamless and complementary combination of the two libraries.

You can have a lot of fun with RA. The possibilities are endless, especially when you mix the sounds of different cultures together. Load up the middle eastern string section, apply an Indian or Egyptian tuning from the micro-tuning presets and play them in octaves. Make a really cool groove with the didgeridoo effects and the Vietnamese jaw harp. Take a classical filmscore piece and replace all of the instruments with their ethnic counterparts: strings with middle eastern string section; solo violin or cello with electric baritone violin, hardangerfiddle, or erhu; french horn with alpenhorn; flute with dizi; oboe with duduk; western percussion with taikos and African percussion; harp with kora; trombones with rag dung; etc., etc. Or perhaps try the hurdy gurdy, hardanger fiddle, washburn guitar, mandolin and the dizi and make an interesting folk ensemble; or try the gamelan ensemble with the ney flute, duduk and esraj. And don't forget the reverb to bring them all together in the same acoustic space!

Nick Phoenix, Producer
QUANTUM LEAP

The Instruments in Quantum Leap RA

The tables that follow provide a brief but complete listing of all 65 instruments available in Quantum Leap RA. Descriptions of these instruments—along with pictures—are in Chapter 4, starting on page 21. And for a listing of all the available articulations, go to Chapter 5, starting on page 61.

AFRICA

African Dual Wooden Shakers (Ewe)	Ekpiri	Kidi
African Metal Shakers (Ewe)	Ewe Drum Ensemble	Kora
Atsimevu	Ewe Bombshell	Log Drums
Axatse	FromTonFrom	Ngoni
Batas	Gankokwe Large	Udu
Berkete	Gyil	
Dejembe Ensemble	Kalimbas	

AMERICAS & AUSTRALIA

1890 Washburn Guitar	Cuban Percussion	Mandolin
American Jaw Harp	Didjeridoo	Pan Flute
Banjo	Dobro	Ukelele
Berimbau	First Nations Cedar Flute	

EUROPE

Alpenhorn	Gadulka	Irish Low Whistle
Bag Pipe Ensemble	Hardanger Fiddle	Launeddas
Bass Recorder	Highland Pipes	Uilleann Pipes
Frame Drums	Hurdy Gurdy	

FAR EAST

Dizi	Koto	Shamisen
Erhu	Rag Dung	Taiko Drums
Gamelan Ensemble Gongs	Shakuhachi	Vietnamese Jawharp

INDIA		
Bansuri	Sarangi	Tablas
Baritone Violin (Electric) Esraj	Sitar	Tambura

MID EAST & TURKISH EMPIRE		
Armenian Duduk	Mid East String Section Ney Flute	Turkish Duduk
Bulgarian Duduk	Oud	Yali Tambur
Mid East Fiddle	Qandahar Dumbek Santoor	Zourna

What's Included

This Quantum Leap RA library you purchased includes all the following:

- a complete set of sample-based instruments, enumerated later in this manual
- approximately 13 Gigabytes of 24-bit, 44.1 kHz samples
- the EastWest PLAY Advanced Sample Engine
- the unique authorization code that identifies the license you bought
- manuals in Adobe Acrobat format for both the EastWest PLAY System and the Quantum Leap RA Virtual Instrument
- an installation program to set up the library, software, and documentation on your computer
- an Authorization Wizard for registering your license in an online database

One required item *not* usually included is an iLok security key. If you already have one from an earlier purchase of software, you can use it. Otherwise, you need to acquire one. They are available from many retailers that sell EastWest and Quantum Leap products, or you can buy one online at www.soundsonline.com.

Hardware Requirements

See the Play System manual for a complete list of the Hardware and Software Requirements for installing and running any PLAY System library. In addition, the available space on the hard drive required for a full installation of Quantum Leap RA is approximately 13.2 GB (Gigabytes).

3. The Quantum Leap RA User Interface

Click on this text to open the Master Navigation Document

The Quantum Leap RA User Interface

Each library presents its own interface when one of its instruments is the current one, as specified in the Instruments drop-down in the upper right corner. The image at the bottom of the page provides an overview of the entire window when in Player View when the current instrument is from the RA library.

Much of this interface is shared by all PLAY System libraries, and the common features are described in the PLAY System manual. The controls described later in this section are those listed on the next page.

- Performance
- Round Robin Reset
- Stereo Double
- Filter
- Microtuning
- ADT
- the graphical representation of the Envelope

Performance

There are four buttons grouped together in the Performance section. They include three buttons for turning on and off scripts specific to RA that control performance parameters:

- Portamento
- Repetition
- Legato

The fourth button in the group, Round Robin Reset, labeled as “rr reset,” is described below.

See the section on Performance Scripts, starting on page 17, for information on how to use these scripts.

When you first open an articulation, there are default settings (On or Off) for each of the three scripts, as chosen by the EastWest sound designers. If you want a different set of defaults, you will need to save the .ewi file that way and load your new version.

Legato Button

Legato is the style of playing notes in a phrase with no significant silence between them in order to produce a smooth and flowing melodic line. Use this button to turn on a legato effect for the articulation.

Portamento Button

Portamento, also sometimes called glissando, is the technique of a continuous slide in pitch from one note to the next note in the phrase. Portamento, as used in this virtual instrument, is usually a short, anticipatory movement between the pitches of two adjacent notes. This technique is most common in instruments that are not restricted to playing notes of any specific scale, such as where bending of notes is possible.

Turning on portamento in a phrase is a subtle way to increase a sense of realistic playing.

Repetition Button

Repetition, in this context, refers to the playing of a single pitch more than once with no different notes played between them in the same phrase. Turning on this button causes repeating notes to sound slightly different, avoiding the sense of mechanical repetition.

Round Robin Reset Button

A round robin articulation is one in which several different samples are recorded with all parameters, such as volume, speed of attack, and so on, being essentially constant. The PLAY Engine then knows to alternate between the two or more samples during playback. The goal is to avoid what's often called the "machine gun effect," in which playing the same sampled note repeatedly causes the unnatural sound of consecutive notes being mechanically identical.

There's one potential problem with round robin technology, and one way to solve it is the Round Robin Reset button. The PLAY Engine remembers which sample should be played the next time the note sounds. If, for example, a round-robin patch contains two samples, A and B, and a piece uses that note 7 times, the PLAY Engine plays A B A B A B A. If the piece is played again from the beginning, the engine will play starting with B, because that's next in order. The second rendition will be subtly different. Being able to reset all round-robin articulations to the beginning of the cycle allows for consistent playback.

You can use this button to reset all round robin articulations on demand. Or use your choice of a MIDI note or MIDI control code to reset them one instrument at a time from a MIDI keyboard or the data stored in a sequencer project. See the description of the Settings dialog for more information about this articulation-specific approach.

Stereo Double Controls

This knob, with its three buttons, gives the user the option of using exclusively the left stereo signal or right when "Stereo" is selected from the Channel Source drop-down. For any other setting, this control has no effect.

The knob lets the user determine the spread of the signals, how far apart the ear perceives the stereo channels to be. A value of 0% brings the two channels together at the center (unless the Pan knob positions the output differently), and is the equivalent of turning off the controls with the button below the knob. A value of 100% call for the maximum spread available. Select between the left and right signal with the buttons on either side of the knob.

Filter Controls

The Filter controls take the sound of the instrument, and modify it by filtering out some of the sound above a certain frequency. This type of effect is commonly called a Low Pass Filter.

The Frequency knob determines where the sound starts to be filtered out. The Resonance knob specifies how much the filter "rings" at the dialed frequency. The higher the resonance knob is set, the more focused this ringing becomes.

The graph gives you visual cues about the frequency distribution you are creating with the settings you select.

Microtuning Controls

The instruments in Quantum Leap RA have origins all over the world. Many of these cultures have developed their own, distinctive scales different from the diatonic scale of the European tradition on which much of western music is based. RA makes it easy to incorporate these various scales in your music to provide an authentic feel.

There are two Microtuning controls. The one at the left is a drop-down list of all the scales available in RA. At the top of the list is "Western," which tunes the 12 notes in each octave to the traditional scale heard in all the other libraries; this choice, in effect, turns off microtuning. The other options in the list adjust the pitch of some—or all—of the 11 non-root notes to achieve the characteristic sound of the chosen scale.

The control at the right is another drop-down list of the 12 note names. This choice tells the PLAY engine which note is the lowest note in the scale, called the "root." All intervals for the other scale notes are relative to this fixed pitch.

In RA PLAY there are dozens of scales available that can be rooted to any of the 12 keys. This makes them very flexible. There are 2 types of scales available.

- Scale Type 1 includes all 12 notes in the octave and applies microtuning to all the notes.
- Scale Type 2 limits the notes that you can play in the octave, giving you the authentic scale intended. Microtuning is also applied. When you play notes that are not in the intended scale, only correct notes are heard. This is a great feature which helps the user to quickly learn about ethnic music in general. Also, the notes that are not part of the scale are doubles or alternate takes for the notes that are part of the scale. Alternate takes make this approach a useful way to play interesting repetitions.

ADT Controls

Artificial Double Tracking is a technique, invented at Abbey Road when the Beatles were recording there, that approximates the effect of double tracking (recording two nearly identical takes of a vocalist or instrument on the same part and laying one on top of the other) without actually taking the time to record two takes. And some would say ADT improves on actual double tracking even beyond the savings in time. The original ADT process was based on magnetic tape; in the PLAY Engine, the effect is created digitally. The software programmers, however, added a tape simulator to mimic the slight speed variations of the two analog tape machines that created the ADT effect.

The **Delay** knob specifies in milliseconds, the delay between the original signal and the secondary signal. A delay of around 40 ms is typical, so is often a good starting point when crafting a specific effect.

The **Depth** knob specifies the amount by which that delay is modulated. You don't want a exactly consistent delay; the delay of the secondary signal will vary forward and backward in time by this much.

The **Speed** knob varies the speed at which that delay is modulated.

The **Level** knob specifies the relative loudness of the secondary signal. Set it to 0.0 dB to hear the effect at its strongest, with the same level on both signals; higher or lower gives preference to one of the signals. The overall effect depends on their combination.

The **On/Off** button allows you to kill the ADT effect instantly and then reinstate it with the same settings, as needed.

The Graphical Representation of the Envelope

The Envelope Controls are described in the main PLAY System manual because they are common to all PLAY System libraries. Only some libraries include the graph, as shown here, so it is included in the manuals for those libraries only.

Note that the total width of the graph represents the total length of all phases of the envelope. Therefore, when you change something in one part of the graph, for example, the decay, you may see the slopes of other components, the attack and the release, change as well because those phases become a larger or smaller percent of the whole; this is as expected.

The Browser View

The Browser behaves identically among all PLAY System libraries. Read the main PLAY System manual for information about how to use that view.

Performance Scripts

The RA Virtual Instrument includes three built-in scripts that can provide extra realism to phrases that take advantage of their benefits:

- The Portamento script provides a sliding pitch between consecutive notes in a phrase. This can be used to emulate the subtle portamento that occurs, for example, when a string player's finger moves along the string at the beginning or end of a sounding note.

- The Repetition script changes the quality of the notes when a single pitch is played multiple times in quick succession. Although similar to what can be achieved with

Round Robin patches, the effect can be used on any articulation, not only those with "RR" in the name.

- The Legato script creates a more flowing and connected sound for notes in a continuous phrase.

The scripts themselves are not modifiable by the user, but one important parameter can be adjusted using a MIDI control code. See details of how to use the control codes in the descriptions that follow.

In order for a script to actively affect the notes in an articulation file, the script must be activated in the PLAY user interface. The image above shows the Portamento script turned on and the other two scripts left off. In addition, the appropriate MIDI Control Code must not be turned Off; that means if MIDI values are being generated for the On/Off code on this channel, as in the table below, they must currently be in the range 64 to 127; if MIDI CC values are not being generated, the Control Code is considered On (as long as the light in the user interface is On).

The effect of engaging the Portamento or Legato effect is subtle. The goal is the sound of smooth, connected playing and not anything so pronounced that it will draw attention to the effect itself. These two scripts share many features in the ways they affect the sound; that is, the Legato script includes a small portamento component and vice versa.

MIDI Control Codes

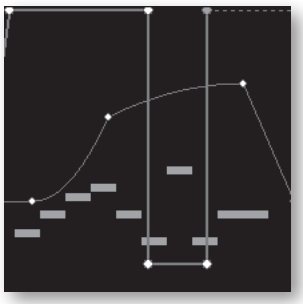
These MIDI values can be controlled in standalone mode by adjusting the controls (knobs or sliders) on a "control surface" or MIDI keyboard. When run as a plug-in inside a sequencer or other host, you can create a controller envelope to automatically adjust values during playback. See the documentation from your hardware or software for information about how to change the values of control codes.

The following table lists the codes that affect these scripts. Note that the MIDI Control Codes have no effect unless the corresponding script is turned on in the PLAY interface.

Code	Portamento	Repetition	Legato
5	Time		Time
65	On/Off		
68			On/Off
69		On/Off	

The three On/Off control codes all work the same way: a value 64 or higher turns the script on and any other value (0–63) turns the script off.

CC 5 affects the duration of the portamento or legato. The possible values are 0–127. The higher the value the longer the effect takes to complete; that is, you should set higher values to make the sound more pronounced. Use your ear to find the right values for each note in the phrase.



The image at the left shows two envelopes affecting the Portamento script in a host. The nine white horizontal bars are the notes. The light-gray line that jumps from the top to near the bottom and back to the top is CC 65 that turns the script on and off so that only some notes use portamento. The curving line near the middle is CC 5, setting the effect's "Portamento time" parameter for each note individually. (Note that the middle section, when the CC 65 line is near the bottom, CC 5 actually has no effect because the script is turned off at that point.)

Monophonic Behavior

Both the Portamento and Legato scripts change the instrument so that it can play only one note at a time whenever the script is turned on. If a note is still playing when a new note starts, the first note will end at that moment. This behavior allows for no ambiguity in how the notes form a phrase.

One consequence of this behavior is that if you want two concurrent legato lines—or one legato and one non-legato line—played with the same articulation, you need to open the same articulation file more than once and turn on the Legato script where appropriate. Of course, the same rule holds for the Portamento script.

Repetition Script

When playing consecutive notes of the same pitch, the use of a single sample over and over in quick succession can sound mechanically identical, which is called the "machine gun effect." The Round Robin patches are one way to fix this problem. The Repetition script solves the same problem in another way. For any articulation, this script uses one or more of three randomly selected options to keep the sound a little different on each repetition:

- Use the sample for a nearby note (for example, a half step higher or lower) and retune it to the needed pitch.
- Start the note a tiny amount before or after the specified start time.
- Detune the sample a few cents (hundredths of a semitone) higher or lower.

This variability gives the sound a more human, less robotic, feel. After all, what human instrumentalist plays every note exactly on pitch and at exactly the notated time?

The producers have selected which of these three approaches will be used for each articulation file—and how much variability to allow—to achieve the most realistic behavior. That is, some patches randomly use all three approaches, while others may use only one or two of them.

Note that Repetition scripts do not have the equivalent of the Round Robin Reset button to ensure an identical sound every time the same track is bounced to audio. The randomness of the results is a feature. You need to decide how important exact repeatability is when selecting either a round robin patch or the Repetition script.

PLAY

4. The Quantum Leap RA Instruments

Click on this text to open the Master Navigation Document

The Quantum Leap RA Instruments

This chapter describes the instruments sampled in this library. Because many of them will be unfamiliar to readers, the text provide background information as well as an overview of the traditional techniques for playing each instrument. Specifically, the section for each instrument includes a photograph and these three topics:

- Origins
- Construction
- Techniques
- Articulations

Most of the instruments can be played in multiple ways to create different sounds, called the instrument's articulations. A list of the articulations for each instrument can be found in the tables in the next chapter. Each description provides a link to the table of that instrument's articulations. Click on the page number to be taken directly to the table.

Instrument Types

As seen in the PLAY Browser view, the articulations can be opened in multiple ways:

- A **Keyswitch** program, with "KS" in the name, contains two or more articulations. The choice of which articulation to play for any given note is controlled by the keyswitch notes. See the complete description on keyswitches in the PLAY System manual. In the tables in the next chapter, you can read which keyswitch note is assigned to each articulation.

- A **Live** program contains two or more articulations in one of two different configurations. The groupings are called "Live" because they are designed for playing the instrument in real time on a keyboard—but can also work very well in a sequencer.
  - › A **Velocity Switch** uses each note's velocity to determine which articulation to play. Usually, a common articulation is assigned to all the low and mid-range velocities, while the higher velocities are assigned to characteristic ornaments, such as a trill or a bend. In the next chapter's tables, the articulations are listed as Vel 1, Vel 2, etc. When playing live, dig into the keys when you want to hear one of these special sounds.
  - › A **Round Robin Switch** alternates among the included articulations. In the next chapter's tables, the articulations are listed as RR 1, RR 2, etc.

- A **Big** program layers 2 sets of samples—*i.e.*, plays the two samples simultaneously—in order to achieve a sound bigger that what was heard during the recording session.

Articulations can also be opened **individually** within PLAY. When one or more of the groups listed above is present, the individual articulations are usually contained in an Elements folder (as in the image above).

A few instruments, for example most of the African instruments, contain only one articulation file, so you will see none of the special collections above.

Finally, note that unpitched percussion instruments usually assign the different articulations to different notes within a single instrument file. For example C3 might be a hit at the center and D3 might be a roll and E3 might be a hit near the rim.

The descriptions are grouped into instruments from each of the following geographical regions in this order:

1. Africa, starting on page 22
2. The Americas and Australia, starting on page 31
3. Europe, starting on page 37
4. The Far East, starting on page 43
5. India, starting on page 49
6. The Middle East, starting on page 54

Within each region, the instruments are listed alphabetically.

At the end of most descriptions is a reference to the page where a table lists the various articulations with information on how to invoke each sound. Click on the page number to be taken to the start of the table.

Instruments of Africa

Bata

Origins

Bata drums were first introduced in the Yoruba region in the southwest of what is now called Nigeria. They were invented during the reign of King Sango and were considered his royal drum. The bata drums are mostly played in medium sized ensembles. They were traditionally used for a variety of purposes, including allowing a king to summon people to court, announcing visitors to the king, sending messages such as announcements or warnings to all within hearing range, and most importantly for ritual purposes to speak prayers.

Construction

The wood shell carved bata is shaped much like an hourglass. It is meant to be played parallel to the ground, hung from the shoulder, or resting on the musician's lap. There are two animal-skin heads on either side of the drum. One is of lower pitch and the other of higher pitch. Batas vary

in size. A typical ensemble of batas will normally consist of small, medium, and large drums.

Techniques

Because of the tonal nature of the Yoruba language, the batas are typically played to speak certain phrases or passages in the Yoruban tongue. For the purpose of this sample library we have included two basic articulations that are most common to the bata. The most basic articulation is the Open Tone. This is accomplished by striking the head of the drum with a bare flat hand and letting the sound sustain. When played correctly, the Open Tone produces a sound that is mostly composed of the fundamental pitch of the drum. The second most common articulation is the Open Slap. This is accomplished by striking the head of the drum with a slightly curved bare hand. When played correctly, this articulation produces a brighter, higher pitched sound.

Articulations

These instruments do not have separate articulation files. PLAY uses separate notes to sound the various articulations.

Berkete

Origins

The Berkete, also known as the Gungon, is from the West African country Ghana. It can mostly be found in the central and northern regions of Ghana. The Berkete is usually played in medium-size ensembles and is accompanied by an ensemble of African talking drums.

Construction

The wood shell carved Berkete is shaped like a bass drum and varies in size, but mostly about 14 inches in diameter. The thin goatskin head is strung with a medium gauge gut string on the outside to produce a sustained raspy sound.

Techniques

There are two basic articulations played on the Berkete:

- Striking the head with a stick while letting the drum fully sustain generates the sound of the open hit.
- The mute hit is produced by striking the drum with a stick while pressing the stick firmly into the head to cut off the sustain of the drum.

Articulations

These instruments do not have separate articulation files. PLAY uses separate notes to sound the various articulations.

Djembe Ensemble

Origins

The Djembe originated from the Mali Empire around the time of the 12th century. The Mali Empire covered an area that encompasses significant portions of the present-day countries of Mali, southern and western Mauritania, Guinea, and Senegal. It has been said that the Djembe was invented for King Sunjata Keita and was held as a shrine for many years before it was publicly played.

Construction

The Djembe is carved from wood. It has a shape similar to a wine glass. Presently, the drumheads are made from calf, deer, or goat skin. The heads are strung with rope in a very particular pattern around the drum in order to fasten the drum skin to its wooden body. As an option, some Djembe players attach metal fin-shaped ornaments to the drum called Ksink-Ksink. These are usually made from tin or aluminum and have metal rings fastened to them. This produces a raspy, rattling sound when the drumhead is struck.

Techniques

For the purpose of this sample library, we have included three basic articulations and one extended articulation. The most basic articulation is the Open Tone. It is accomplished by striking the drum with a bare flat hand toward the edge of the head while allowing the drum to fully sustain. When played correctly, the Open Tone produces a full, round, and fundamental sound. The easiest articulation to play is the Bass Tone, accomplished by striking the drum with a flat bare hand in the center of the head while allowing the sound to sustain. This produces a sub-harmonic bass sound. The most difficult articulation of the basic three is the Open Slap. This is accomplished by striking the drum towards the edge of the head with a slightly curved hand. When played correctly, it produces a brighter, higher pitched sound. We have also included a Grace Note articulation. Many Djembe players use this articulation in order to quietly subdivide or keep time while playing patterns or solos. The Grace Note articulation is accomplished by quietly tapping the tips of the finger on the edge of the drumhead.

Articulations

These instruments do not have separate articulation files. PLAY uses separate notes to sound the various articulations.

Ewe Percussion

Instruments:

Ewe Drum Ensemble , Atsimevu, Kidi, Axatse and Gonkowe

Origins

These instruments are from the West African country Ghana and are native to the Ewe tribe. The Ewe people mostly use these instruments for cultural ceremonies, rituals and celebrations, when they are accompanied by an ensemble of dancers and singers.

Construction

The drums (Atsimevu and Kidi) are constructed of wood, either as one solid carved piece or, as is more common, of wooden slats bound by metal rings. The drum heads are usually made out of a skin of a deer or antelope and are held on the drums by strings attached to a number of tuning pegs.

The shaker (Axatse) is made of a gourd, hollowed out by removing the seeds, and covered with a net of beads or seeds. It looks very similar to the shekere. but with one noticeable difference: the top of the gourd is not cut off. This is done to give the Axatse a brighter and sharper sound that makes it cut through the loud ensemble of drums that it accompanies.

The bells (Gonkowe) are made from iron hand-forged in a distinct traditional shape by blacksmiths. The structure of the Gonkowe consists of a larger low-pitch forged iron bell and a smaller high-pitch one permanently stacked together. The larger iron bell is considered the parent and smaller one is considered the child in the protective bosom of the parent. They look very similar to—and could even be considered relatives of—the agogo bells.

Techniques

The drums are played by striking the head with a full bare hand and/or a stick. Striking different positions and manipulating the head by damping it with the hand produces a series of pitches, which form the basic vocabulary of the Ewe drums.

The Axatse is played by striking it lightly on the thigh and the palm. When struck off the thigh, a dry rattling sound is produced. When struck with the hand in a clap-like manner, it produces a rattling sound combined with a higher tonal component due to the vibration of the air inside the gourd.

The Gonkowe is thought of as a substitute for the human voice and imitates the manner in which the mouth produces speech. It is played with a stick held in one hand and the larger bell resting on the thigh of the performer who usually sits.

Articulations

These instruments do not have separate articulation files. PLAY uses separate notes to sound the various articulations.

Frontomfrom

Origins

The Frontomfrom is from the central region of Ghana. It is mostly played by the Ashanti tribe.

Construction

The wood shell carved Frontomfrom is a large cylindrical upright-standing drum. Typically, the Frontomfrom can range from 3 feet to 8 feet high. The head is made from goatskin and is tied by string to a number of tuning pegs around the drum.

Techniques

The Frontomfrom is struck by an angled stick or with the bare hand. There are three basic ways to play the Frontomfrom: the open stick hit, the open hand hit, and the stick mute. The stick hit is produced by sticking the head of the drum while firmly pressing the stick against the head to mute the sustain of the drum.

Articulations

These instruments do not have separate articulation files. PLAY uses separate notes to sound the various articulations.

Gyil

Origins

The gyil is a 14–18 key xylophone played by the Dagara people in Ghana, Burkina Faso, and Cote d'Ivoire. It is the national instrument of the Lobi and Dagara people . Throughout West Africa, the people believe that its woody sound comes from a vibration of water that physically balances the water in the bodies of humans and animals.

Construction

The gyil's wooden keys resonate over gourds, which each have holes lined with papery spider egg sacks. These vibrating membranes create a buzzing sound, or "spirit," around the melody that is a crucial element in music across Africa. The 14–18 wooden slats are suspended on a frame over the gourds. Its sound is like the Western marimba, yet more earthy in character. Gyil music is to the ear as a kaleidoscope looks to the eye—a dazzling matrix of consistent yet ever-changing interlocking elements engaged in dynamic conversation.

Techniques

South of the Sahara Desert in West Africa there is a long standing tradition of gyil artistry. In the gyil tradition, every rural community has its own style of playing, its own tonality,

and its own musical masters. The instrument is played with a pair of large soft mallets, or sometimes with sticks.

Articulations

There are multiple articulation files for the gyil, but they do not appear in their own folder.

Kora

Origins

The kora is found in all Mande cultures. It is played by the Mandinka in Gambia, Senegal and Guinea Bissau, the Malinke or Maninka in Guinée, the Bambara or Bamana in Mali and the Dioula in Côte d'Ivoire (Ivory Coast), though it's Gambia and Casamance (South Senegal) where it has the greatest importance for social life. The kora has a centuries-old tradition and has been played at royal courts, where the musicians and griots belonged to the personnel. The kora was mentioned for the first time in literature in 1799 by Mungo Park.

Construction

The Kora is a West African harp in the family of bridge harps or harp-lutes. The Kora is often said to be a mix between a harp and banjo/lute/guitar. It's the most highly developed string instrument of Africa. The construction of the instrument, as well as the music, is unique in the world. The Kora has a large hemispherical body, a long neck and two planes with 11 and 10 strings running in notches at the sides of an upright mounted bridge. Its body is traditionally made from a calabash cut in half and covered with cow-hide. Strings are commonly made from fishing line and are arranged into two planes—one for the right hand and one for the left.

Techniques

The playing style resembles the finger-picking blues guitar, the placement of the strings allows for the playing of chords and harmonies and fast melodic runs. The strings are plucked by the thumb and forefinger of each hand. The Kora can also be tapped (like a drum) for rhythms and effects. It is played as a solo instrument, accompanying a singer, or as part of an orchestra.

Articulations

This instrument is provided in a single articulation file.

Log Drums

Origins

This particular log drum, natively called "Ekwe," originates from the eastern region of Nigeria.

Construction

The log drum is made from a hollowed out wooden log with two rectangular holes carved out from one side of it. The piece of wood that separates the two rectangular holes is severed in the middle. This is done to produce two areas of the drum that vary in pitch.

Techniques

Typically, the log drum is played by striking the side of the drum over either of the two carved out rectangles. The log drum is most commonly played with a bare stick or a rubber tipped mallet.

Articulations

These instruments are available in both an unpitched articulation file and a pitched version (called "Log Drums Melodic").

Ngoni

Origins

The ngoni is a lute. There is a lot of confusion about this name. Ngoni signifies a string instrument which can be a harp or a lute. Possibly, this is the ancestor of the 5-string banjo (as some tunings and playing styles suggest). The ngoni is probably the oldest of the Jaliya instruments, older than the balafon and the kora.

Construction

The ngoni come in various sizes and ranges:

- Ngoni Ba—the big, deep one
- Ngoni Micin—the small, high-pitched one

The number of strings varies between 1 and 7. The most common type has 4 strings: 2 long ones and 2 short ones. The long ones are shortened with left hand fingers like a guitar, each short one is tuned to a given note of the scale depending on the song being played. Instruments with more than 4 strings have additional short strings to extend the tonal range.

Techniques

The playing technique, especially for the right hand, is very complicated and uses a lot of ornamentation, sound variations, and percussive knocking. For every typical song there

is a special tuning with separate fingering. The ngoni has a huge repertoire of songs, both pentatonic (*e.g.*, Bambara music in Mali) and heptatonic (*e.g.*, Jaliya music compatible to kora and balafon). As it is a fretless lute, there are many exotic microtonal modes being used that can be played without retuning the strings for the second, third, sixth, and seventh intervals. The fourth is either pure or sharp, the fifth and the octave are always pure. Some players use finger picks for right thumb and forefinger.

Articulations

This instrument has only a single articulation file.

Kalimbas

Origins

The kalimba is a modern version of the African mbira. In the 1920's, Hugh Tracey came from England to Rhodesia (now Zimbabwe) to help his older brother run a tobacco farm. He became fascinated by the local music culture. Through the encouragement of prominent composers such as Ralph Vaughan Williams and Gustav Holst, he decided to make a study of African music and eventually create the International Library of African Music. The mbira was one of his greatest interests and he created the kalimba based on the African mbira. Introduced by Tracy in the early 1960's, kalimba was the registered trademark for his diatonic instrument that soon became popular around the world. The word kalimba literally means little music. It was well suited for Western music and made it easy for the performer to play harmony using both thumbs. As with the mbira, the name kalimba is known throughout much of Africa, but regionally, the name mbira is more commonly used in Zimbabwe.

Construction

The basic kalimba is a modern mbira with a sound box. It has metal keys or tongues (called lamellas) attached on the top. The keys or tongues are sometimes made from cane. The sound box is kyatt wood (an African hardwood), with keys or tongues made of European spring steel. The keys usually consist of 20 to 24 metal tongues mounted across two bars at one end attached to the sound box with a wooden dowel holding them in place. The bar closest to the sound hole serves as a bridge, the other to provide a means for the dowel to hold the keys (tongues) in place. The free ends of the keys are positioned at different lengths to produce the variety of pitches. The length of the vibrating end of the keys determines the pitch (a shorter key produces a higher pitch).

Techniques

The kalimba produces a haunting, fluid percussive sound that is considered tranquil and enchanting. It can be a solo instrument or as an accompaniment to singers, musicians, and dancers. The keys or tongues are plucked with the thumbs, or with combinations of thumbs and fingers. Since you can play either simultaneously or alternating between both thumbs, harmonic and rhythmic effects are possible. Many effects can be employed by plucking up or down on the keys. The treble kalimba has the same seventeen-

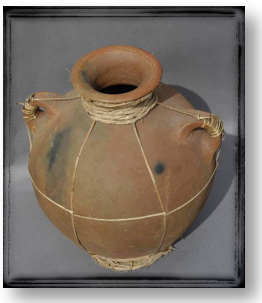
note range, but it also has a sound box that provides deep resonance that distinguishes it from the celeste kalimba. The alto kalimba features the same sound box as the treble kalimba, but has a more limited fifteen-note range.

Articulations

There are multiple articulation files for the kalimba, but they do not appear in their own folder. See page 62 for a list of the articulation files.

Udu

Origins



The udu is a vessel drum originally from the Igbo people of Nigeria. Traditionally it was a water jug with another hole in the side, played by women for ceremonial music. The origins of the drum have been traced back to central and southern Nigeria. Although we're using the term udu, the side hole pot drum is known by many different names, depending on the tribal areas and particular ceremonies in which it is used.

Construction

The traditional method for making an udu is to pound a lump of soft earthen clay over a firm spherical form known as a lump mould. The lump of clay is placed on the mould and tempted into shape around it with a large flat stone. It is then carefully beaten to uniform thickness with handmade paddles a little like huge wooden spoons or ping pong bats.

Following this, it is cut down to a half sphere on the mould. This half sphere becomes the bottom half of the drum. The top half is then constructed using the coil method, which involves building up long lengths of clay, one upon another, before squeezing, paddling, and shaping them up and into the sides of the drum. What follows is an elaborate drying and polishing process that is said to take at least one month.

Techniques

The drum can be played in a number of ways; for example, by sitting cross legged on the floor, one can put the drum in one's lap with one hand over each hole. The hand on the top controls the pitch while the other plays over the hole on the side. One can use the palms or finger tips, slap in the fashion of conga playing, or even play them with mallets or brushes. It is also possible to stand-mount udu drums and play them standing up. For RA we sampled a very large udu played with a paddle.

Articulations

These instruments do not have separate articulation files. PLAY uses separate notes to sound the various articulations.

Instruments of the Americas & Australia

Banjo

Origins

The Banjo was acquired into the traditions of many cultures through the African slave trade. African slaves, built the design of the early banjo on instruments native to their regions of Africa. It eventually reached America, where the instrument became popular among white men in the Minstrels. During the American parlour era, or classical era, there were many virtuoso banjo players, and it became popular as both a symphony orchestra member and solo instrument. Additionally, the banjo became an essential instrument during the jazz era and was used in many jazz ensembles. The 1929 stock market collapse and following depression is credited with wiping out the banjo's popularity, because its sound was so joyful; it was quickly replaced with the arch-top guitar. It was repopularized into American country and bluegrass by Bill Monroe, in which style it is most commonly used to this day.

Construction

The modern construction is a metal body in the form of a drum and fretted wooden neck with five strings. A gut or animal skin is stretched across the top to make the resonator, while a tone ring lines the inside of the top. The tone ring is made of brass, steel, or wood (birch or maple) and is what gives the banjo its characteristic tone—the choice of material used to create the ring is what each banjo its very distinctive tone, different from those made with other materials.

Techniques

There are many different tunings used to play a banjo, the most common being the "Open-G" tuning, which is, gDGBD, the small "g" being an octave higher than the "G" on the third string. Traditionally, the banjo is played while seated, resting the banjo's body between the legs. Finger-picks are used to pluck the banjo, the most common being metal picks on the finger and plastic on the thumb.

Articulations

See the table of articulations starting on page 64.

Berimbau

Origins

Much is unknown about the exact native origins of the berimbau. However, it is known that Africans brought it to Brazil during the massive slave trade to South America. It was in Brazil where the berimbau became closely associated with the Afro-Brazilian martial dancing art know as Capoeira.

Construction

The berimbau is composed of a bow-like body with a metal string attached to both ends. Attached to the bottom end of the bow, closest to the performer's body, is a gourd shaped resonator made from calabash know as the cabaça. The cabaça is used for amplification and it produces the trademark "wah-wah" sound that uniquely identifies the instruments.

Techniques

The berimbau is played by striking the metal string with a thin wooded stick. The performer then controls the timbre of the sound by moving the cabaça against his or her body. Further control of the sound can be achieved by pressing a coin shaped stone against the vibrating string to produce a raspy, muting sound that gradually chokes the sustain of the instrument.

Articulations

See the table of articulations starting on page 63.

Cuban Percussion

Instruments

Congas, Bongos, and Timbales

Origins

The exact origins of these instruments are unknown due to the fact that they were brought to Cuba during slave trade to southern North America around the 19th century. Many agree that these instruments derived from a mixture of African cultures.

Construction

The congas are constructed of wood, either as one solid carved piece or of wooden slats bound by metal rings. The drumhead is fastened on the top of the drum by metal lugs.

The bongos are constructed by attaching two small circular drums to a small wooden block. Typically, the two drums vary in size in order to create two different pitches.

The timbales consist of two different sizes of one-headed, tom-tom like, brass drums suspended on a metal stand.

Techniques

For the purpose of this library, we have sampled the basic "open tone" technique of striking these drums. However, for the Conga we have included the following extra techniques:

- Marcha—a technique of rocking the palm on the hand and the fingers back and forth to produce a time marking or subdivision in between the various other techniques.
- Mute Slap—achieved by muting the drumhead with one hand while striking with slightly curved finger with the other hand.
- Open Slap—much like the "Mute Slap," only without muting the drumhead.

Articulations

See the table of articulations starting on page 63.

Didjeridoo

Origins

The didjeridoo's ancient origins suggest that it is one of the oldest instruments in the world, with an aboriginal history that stretches back 40,000 years. It is used by aboriginals in sacred ceremonies and healing rituals. They believe the continuous drone to be the voice of the earth, which reaches into the universe's collective subconsciousness.

Construction

A hollowed out cactus which is reversed—traditionally a portion of eucalyptus tree hollowed out by ants—is used. Resin or bees wax is formed into a mouthpiece at the end of the tube.

Techniques

Circular breathing is a fundamental technique. Tongue shape and momentum create variation in tone.

Articulations

See the table of articulations starting on page 66.

Dobro

Origins

The early desire for a design like the modern day dobro was to create a guitar that could compete with the loud brass instruments used in popular music of the early 1900's. John Dopyera and Rudy Beauchamp are credited with the 1927 National tri-cone resonator design, with a body made of metal. One year later, John Dopyera had started his own company with the help and financial backing of the Beauchamp brothers. He debuted the patented "DOBRO," a single-cone resonator with a spider bridge and a body made of wood. Not long after that, National manufactured its single resonator version of the "DOBRO." After some legal battles, with each side suing the other, they formed the National-Dobro company in 1932. Family members founded the Original Musical Instrument company in 1967 and made resonators up until 1970 when they re-acquired the "DOBRO" name. Gibson musical instruments acquired Original Musical Instruments in 1993 and after that time, because they owned the patent to the "DOBRO" name, decided that these instruments should be referred to as "resophonic guitars."

Construction

A wood- or metal-bodied guitar with one to three aluminum cone resonators to enhance amplification. Maple is the traditional wood of choice, but the construction varies depending on the luthier. Wood painted with steel enhances the tone. There is a resonator placed in the guitar which, depending on the guitar, can point out towards the top of the guitar, or towards the back. The "spider" bridge is an eight legged support which spans the disc and helps in string vibration. Six strings are common.

Techniques

Traditional dobro technique is to rest the guitar horizontally, either on the lap or with a strap to position the guitar at such an angle. The right hand uses finger-picks and the left hand holds a steel slide. Open tunings are the most common. One standard is the "Open-G" tuning - GBDGBD. String gauges are lighter and so a lighter touch is required to play the guitar.

Articulations

See the table of articulations starting on page 64.

First Nations Cedar Flute

Origins

This flute was traditionally used by the Plains Indians in courting ceremonies, so it has been given the name of the "love flute." A man serenaded his intended bride in a ritual.

Construction

This cedar flute contains two handcrafted chambers: the first chamber, which is blown into; and the second, sectioned off from the first, contains the finger holes. The blown air travels from the first chamber to the second through a joining totem animal carved on top of the flute, which guides the air through a passage. The totem animal compresses the air giving the unique tone to the flute.

Techniques

Because no embouchure is needed, the flute is fairly simple, and can be played by almost anyone. Each flute is tuned to a specific key, so a different flute is required for each key.

Articulations

See the table of articulations starting on page 67.

American Jaw Harp

Origins

Being a member of the plucked idiophones family of instruments, the jaw harp's origins are unclear. It is a folk instrument common in many cultures throughout the world. Among early American settlements, it was commonly bartered and became a popular instrument among those voyaging west. In many countries it has significance as a ceremonial and religious instrument. In England it is called "Gewgaw," in Norway "Munnharpa,"

in Italy "Scacciapensieri," in France "Guimbarde," in Germany "Maultrommel," in Russia "Vargan," in Siberia "Khomus," and in Bali "Gengong." Throughout the ages, the most common name is the "Trump."

Construction

The key-shaped frame is traditionally made from iron or silver, and occasionally bamboo. A metal stem protrudes from the tip of the key.

Techniques

The base of the key-shaped frame is placed in the mouth and the tip is left out of the mouth. The stem protruding from the key is plucked while manipulation of the size and shape of the mouth changes the pitch. The mouth cavity amplifies the sound of the harp.

Articulations

See the table of articulations starting on page 64.

Mandolin

Origins

The mandolin is a distant relative of the lute, which is, in turn, a distant relative of the oud. Instruments of the lute lineage begin to appear in 2,000 B.C.E in Mesopotamia. They are small fretless stringed instruments used with a plectrum. There are even depictions of lute-like instruments in cave paintings dated between 15,000 and 8,500 B.C.E. They depict a man playing a one stringed instrument with a bow.

In Europe, the mandolin has a 250 year history —where it was used prominently in Italy. Even Antonio Stradivari, the famous violin maker, made mandolins for a time. Italian immigrants brought the mandolin to America, where it gained popularity as both a folk and classical instrument. It was quite popular in the vaudeville circuit. Orville Gibson is responsible for giving the mandolin its current widespread popularity in America. His designs were of such quality that they inspired investors to create a company in his name called the Gibson Mandolin-Guitar Mfg. Co. Ltd., known today as Gibson Guitars. In 1940, the mandolin began to be used in bluegrass and country. And it was Bill Monroe who popularized the instrument for a whole new audience.

Construction

Traditionally, the mandolin is a small bodied instrument with a short neck and 4 pairs of strings. The pairs of strings are duplicated in octaves. Sound holes or F-holes—similar to those used on a violin—are located to either side of the strings on the body of the guitar to project the sound.

Techniques

The standard tuning is the same as a violin— in fifths, GDAE. It is played with a pick; serious picking technique, such as flat-picking and cross-picking, is required.

Articulations

See the table of articulations starting on page 65.

Pan Flute

Origins

Panpipes date back to ancient civilizations and are one of the oldest musical instruments according to archaeological record. Evidence is found in ancient Egyptian civilizations, as well as excavations throughout Europe. There is also evidence of the pan pipes in the Mesopotamia of 3,500 B.C.E. And additional evidence of the design has been found in India, Asia, and Africa. Evidence has also been found in Viking civilizations dating to the 10th century, and Roman excavations in France have uncovered 7 pipes tuned to the ionian scale. Today it is very popular in South America.

Pan was a god of ancient Greek mythology who protected pastoral people and their herds. Pan, lovesick over being rejected by the nymph Syrinx, played sad songs on a flute that he had made from a cane.

Construction

In ancient times the pan flute was made of hollow animal bones held together with calf rope. Today, Pipes are traditionally constructed of bamboo. As the length of bamboo joint decreases, the pitch increases. Some makers line the inner tube with a protective cover of wooden ply.

Techniques

Longer pipes are traditionally held in the right hand. It is an end-blown (vertical) flute.

Articulations

See the table of articulations starting on page 68.

1890 Washburn Guitar

This Washburn Guitar was bought in an eBay estate sale in 2003 for $200. On the inside, is a wood press label which states "Lyon & Healy of Chicago." At the tip of the head, "Patent Applied For" is stamped into the neck. It was in pretty rough shape—the finger board was damaged; the bridge was decayed, several flathead screws used as pegs held three loose strings together; in a word, it was unplayable. I called upon the services of Tim Frick, a gifted luthier friend of mine (and an excellent builder of electric basses) located in the San Francisco Bay area. While I lived several months as a wallflower in his shop, he restored it for me, fashioning a new fingerboard (with a re-fret job) and a new bridge from Brazilian rosewood. As

always, he does excellent work—it is the nicest guitar I have ever played. The samples you have here are a taste of what it can do.

—Pacemaker

Articulations

See the table of articulations starting on page 63.

Ukelele, also Ukulele

Origins

Manuel Nunes together with Joao Fernandes and Augustine Dias migrated to Hawaii in 1879 to wok in the sugar cane fields. Nunes was a master instrument builder from Portugal and over time he, together with Fernandes and Dias, invented what is now known as the ukelele. Impressed with the beautiful timbre the instrument could create, Hawaiians gave the title Ukelele to the instrument meaning "jumping fleas." This instrument is a symbol of Hawaiian identity and spirit.

Construction

The ukelele is a 4-stringed (some builders make between 4 and 10 string ukeleles), small, shaped guitar. The wooden body, is traditionally constructed from wood harvested from the Hawaiian Islands, such as Koa wood, Hawaiian Mahogany, Milo, Kulawood—the wood varies dependent on the luthier. Different sizes are made as well, which are of different registers: standard size, concert size, tenor, and baritone. Traditionally, nylon strings are the strings of choice; some makers prefer to use steel.

Techniques

The soprano, concert, and tenor standard tunings are as follows: AECG. The baritone, though, is tuned as follows: EBGD. Soft picks are sometimes used to create a uniquely mellow tone.

Articulations

See the table of articulations starting on page 66.

Instruments of Europe

Alpenhorn

Origins

Also known as alphorn, this instrument comes from Switzerland (and some other Alpine countries). It is traditionally used by mountaineers. Two thousand years ago or more, Celtic tribes, first settling in the Northern Alps, used the alpenhorn for everyday rituals, both sacred and secular.

Construction

Typically from 1 1/2 to 3 meters in length, the alpenhorn is a wind instrument made of thin strips of birch wood fashioned into a tube. The thin strips are placed in water and soaked until they are tender and can be shaped into the tube, they are then meticulously covered with bark. The mouthpiece is wooden and cup-shaped.

Techniques

Because the only openings for the alpenhorn are at the mouthpiece and horn end, when blown the resulting tone will be a natural harmonic series to the fundamental of the horn. "Ranz des Paches" is the most famous melody of the alpenhorn, popularized by Beethoven in his Pastoral Symphony.

Articulations

See the table of articulations starting on page 71.

Bass Recorder

Origins

Origins are the subject of a very passionate academic debate. The end-blown flute is as old as civilization itself, but it is not known specifically when the recorder itself came into existence. Solid evidence, in the form of actual playable recorders, dates from the 16th century Renaissance.

Construction

Recorders are considered members of the "fipple flute" family. A fipple is a block in the blowing ending which creates a narrow passageway compressing a stream of air into the bore; this gives the recorder its characteristically clear sound. When crafted from the finer aged woods—the material used is dependent upon the maker—all sorts of exotic woods are used. But ultimately the bore and windway design of each recorder is most important.

Techniques

This end-blown flute has the range of two to two and a half octaves. Both left and right hands play the finger holes, and the mouth is placed on the recorder's lip.

Articulations

See the table of articulations starting on page 72.

Frame Drum

Origins

Frame drums are amongst the oldest and most culturally represented drums of the world. The existence of the frame drum dates back well before recorded history and is depicted in sculptures and painting by a multitude of artists, throughout the world, throughout

the history of humankind. For this library we have sampled the style of frame drum that was influenced by Western European culture.

Construction

The frame drum is very simple in its basic form. It is constructed of a wooden hoop, or frame, with a drumhead fastened on one end of it. Frame drums vary in size, typically from around 10 to 20 inches in diameter. A common embellishment to the construction of the frame drum is a gut string fastened to the inside of the head to produce a raspy, vibrating sound to the sustain of the instrument.

Technique

Typically, the frame drum is held upright by the performer. Classical frame drum technique relies heavily on the dominant hand (the one not holding the drum) while the second hand uses only a couple of fingers to aid in filling and/or subdividing. The frame drum is typically played by combining various different finger, hand, and muting techniques to produce complex, conversational patterns.

Articulations

See the table of articulations starting on page 71.

Gadulka

Origins

The gadulka's origins are Bulgarian. Today it is found in central Bulgaria, the Balkans, and Thrace. It is the most ancient folk instrument in Bulgaria. An older relative of the gadulka is the Greek Lyra.

Construction

It is a pear-shaped, hollow, wooden, stringed instrument played with a bow. The entire instrument is carved from a single piece of wood cut from a sycamore, walnut or pear tree. It has 3 playable strings and 11 sympathetic strings.

Techniques

The 3 main strings are often tuned AEA (I V I), although tuning can vary depending on the country of origin. It is played while held upright and resting on the knee or horizontally and held with a strap resting in the center of the chest like a saxophone. The fingertips of the left hand form the melody by playing the strings on the neck, sliding up and down the neck without touching the fingerboard.

Articulations

See the table of articulations starting on page 68.

Hardanger Fiddle

Origins

A Norwegian violin, called the "hardingfele" is recognized as the national instrument of Norway. The oldest known fiddle of this type was made in Ullensvaang, Norway, in 1651 by Olav Jonsson Jaastad. There are over 1000 documented songs for the hardanger fiddle. Each tune is individual and has a lineage as well-preserved as the melody itself.

Construction

Construction is similar to a violin; additionally, there are four to five additional sympathetic strings and a slightly flatter fingerboard. Each fiddle is typically a great art piece—detailed inlays cover the body, mother-of-pearl inlays cover the fingerboard, and the scroll is usually carved into the head of an animal or mythic being.

Techniques

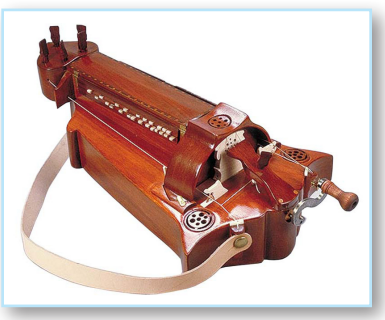
Tunings vary greatly, and there are more than 20 ways to tune the instrument, so there is no standard tuning. Traditional technique is polyphonic. Authentic technique is non-vibrato. For this library, we also recorded vibrato for a "Lord of the Rings" sound.

Articulations

See the table of articulations starting on page 69.

Hurdy Gurdy

Origins



The first known mention of the hurdy gurdy was in the year 942 C.E., and it was first depicted in Europe in the 12th century. The early designs were so large that it took two players to perform: one cranking the wheel and one playing the keys. In the 13th century, it became popular in dance music, and the size of the instrument began to decrease, so flying solo was possible. In the 18th century, the French developed an interest in it and their design is standard today.

Construction

The wooden body is in the shape of a small cello. Where the tailpiece of a cello might hang, a wheel, which requires rosin, is turned by a crank. Strings rest on the wheel and, when the crank is turned, the wheel vibrates the strings; this simulates a bow gliding over strings. A box rests where the neck of a cello would be. The box holds keys which press down on the strings to create pitches. Some strings have fixed pitches which are used as drone strings (much like a bagpipe's drones).

Techniques

The right hand turns the wheel while the left hand plays the tune on the keys. Continuously turning the wheel allows for uninterrupted sound—much like a bag pipe—to give the effect that it is one long, continuous breath. It is easy to bang out a basic tune on the hurdy gurdy, but it does take some time to develop advanced technique.

Articulations

See the table of articulations starting on page 70.

Irish Low Whistle

Origins

The Irish low whistle is used in traditional folk music. It is a descendent of the recorder family and of all end-blown flutes. Its exact origins are unclear.

Construction

Early designs were made of wood. Later, metals such as nickel and brass were used. This is an end-blown fipple flute. The bore, the hollow main tube of the instrument, has six finger-holes. The bore can be either cylindrical or conical. The whistle contains a mouthpiece at one end, which houses the fipple, and a duct, which draw air towards a cut in the side of the mouthpiece.

Techniques

The range is roughly one octave. The characteristic technique uses very fast vibrato.

Articulations

See the table of articulations starting on page 72.

Launeddas

Origins

Origins date back to at least 700–900 B.C.E. in Sardinia where secular statuettes depict a player of the Launeddas. It is a symbol of Sardinian identity.

Construction

A polyphonic reed instrument, it is made up of three different sizes of fen canes. The lowest and longest is called “tumbu,” which is tuned to the tonic, “sa mancosa manna” and “mancosedda” are the other two pipes; they are both melodic pipes. On these two canes there are five finger holes each fingered by the left and right hands simultaneously.

Techniques

The instrument requires a constant flow of air and so a circular breathing technique is necessary. “Sa mancosa manna” and “mancosedda” are played simultaneously, and different combinations of the holes creates different types of “cunzertus.”

Articulations

See the table of articulations starting on page 73.

Highland Pipes

Origins

The highland pipes’ Scottish history dates back to the 14th century. By the 16th and 17th centuries, elaborate decoration of pipes was commonplace. Historically, they are played outdoors at secular events.

Construction

Historical design consists of an air bag, made of sheepskin with five pipes bound into it, a bass drone, two tenor drones, the mouthpiece, and a melody chanter. The chanter is a short pipe with eight finger holes and a thumb hole.

Techniques

The bag is filled with air by the player through the blow pipe. Pressure from the left arm on the bag controls the flow of air to the melody chanter and the drones. The range of the melody chanter is a ninth. The tonic is around a B-flat, and the scale includes a flat seventh.

Articulations

See the table of articulations starting on page 72.

Uillean Pipes

Origins

The uilleann pipes are known to date back to the beginning of the 18th century, when they appeared in Ireland, though their true origin is probably mainland Europe, possibly France.

Construction

Modern uilleann design consists of the chanter, three drones and three regulators: seven actual pipes in all. The chanter plays the melody. The three drones, which can be toggled on or off, are each an octave apart. The three regulators have 4 to 5 keys which play notes that harmonize with the drone and chanter.

Techniques

Traditionally played seated and indoors, uilleann pipes are played in all sorts of social situations and styles of music. Improvisation of tunes and ornamentation is par for the style of the music. The range is two full octaves on the chanter. Playing chromatically is possible with the use of dry reeds.

Articulations

See the table of articulations starting on page 74.

Instruments of the Far East

Erhu

Origins

The erhu evolved from the xiqin, an early Chinese form of bowed instrument that was popular in the 8th century. Chinese origins of the erhu date back as early as the 18th century. The erhu, together with the zhonghu, gaohu, and xihu, form the huqin family of Chinese Instruments.

Construction

This 80 centimeter fiddle consists of two steel strings and is played with a horsehair bamboo bow. The bow hair, rosined on both sides, is attached to the main instrument and, in performance, is passed through the strings. The head of the neck, similar to the western violin's scroll, is often carved in shapes such as a bat or dragon head. The base of the neck attaches to a mahogany, ebony, or sandalwood body and is covered with a snakeskin membrane, which helps to amplify the sound of the fiddle.

Techniques

Played in a seated position, the erhu rests vertically on the left thigh while the left hand holds the neck of the fiddle and the right hand holds the bow. Pushing the bow sounds the lower string and pulling the bow sounds the higher string. The erhu is most commonly tuned in fifths, the lower string usually tuned to D and the upper string to A. The range is anywhere from one to three octaves, depending on the skill level of the performer.

Articulations

See the table of articulations starting on page 74.

Dizi

Origins

"Di" is a term used to describe all Chinese flutes and "Hengdi" describes a transverse flute, one which is slide-blown. Chinese origins of transverse

flutes can be traced back to the Han Dynasty (206 B.C.E.). "Dizi" is the Chinese term used to describe any flute with a membrane. This unique membrane addition, the muo kong, was added by Liu Xi during the Tang Dynasty (618-907 C.E.). Without the muo kong, the transverse flute is found in many cultures around the world, and its ancient origins can be traced back to paintings of the ney flute depicted in paintings in the pyramids of ancient Egypt. The dizi is used to accompany in Chinese Opera.

Construction

The dizi is most commonly constructed from bamboo, but is also fashioned from stone or jade. It consists of six finger holes and the unique additional hole, the muo kong, located between the lip and other holes. The muo kong is a thin membrane made from the inside of the bamboo shoot (or sometimes, it's said, constructed from a thin piece of rice paper). When played, the membrane vibrates to create the characteristic buzzing, resonating sound of the flute which enhances the projection of its sound.

Techniques

The most common range is about two and one quarter octaves. The instrument itself is tuned to a diatonic major scale with the seventh slightly lowered in pitch. Notes outside the scale are accomplished by partially blocking holes. Many accomplished dizi players own a set of seven flutes: one for each key. Despite the limited technique of the instrument, the standard of technical ability can be very high.

Articulations

See the table of articulations starting on page 78.

Balinese Gamelan

Origins

The Balinese gamelan is native to the Indonesian culture. There are two types of gamelan orchestras. For the purposes of this sample library, we sampled gamelan instruments that originate from the country of Bali. The other type of gamelan ensemble, which originates from the country of Java, differs slightly in construction, instrumentation, and composition. Traditionally, gamelan is only played at certain occasions such as ritual ceremonies, special community celebrations, shadow puppet shows, and for the royal family. gamelan is also used to accompany dances in court, temple, and village rituals.

Construction

The gamelan orchestra is comprised of a large variety of instruments. For this library we have sampled two instrument types. The metallophones (calung, katana, and pamade) are constructed much like a vibraphone. They are made from a number of tuned metal bars suspended above an elaborately carved wooden stand.

The gongs (gamelan gong and kajar and byeon) look like most brass Chinese gongs with one distinct difference. Instead of having a flat striking surface, the gamelan gongs have a bell- or nipple-shaped striking surface in the center of the gongs. This is done to produce a tone that is rich in the fundamental harmonic of the gong. The gongs are tuned to specific notes in the gamelan scale. The gamelan gong and kajar serve a time-keeping purpose; it is because of this that they are mostly tuned to the root note of the scale of the particular gamelan composition. The byeon is a group of scale-tuned gongs suspended horizontally on a wooden stand.

Techniques

The metallophones are played by striking the tuned metal bars with a metallic hammer-shaped stick. The larger gong is played by striking the nipped shaped center with a large soft circular mallet. The kajar and byeon are play by striking the nipple-shaped center with a miniature bat-shaped wooden mallet.

Articulations

See the table of articulations starting on page 75.

Gongs

Origins

According to Chinese tradition, gongs came from the country of Hsi Yu in the western region, between Tibet and Burma. The gong is mentioned in writings during the early sixth century, in the time of Emperor Hsuan Wu (500-516 C.E.).

Constructions

Most gongs are made from casting molten metal composites of brass, tin, copper, lead, zinc, and iron. These molten composites are hammered into shape, smoothed by a lathing tool, then tuned. After tuning, some gongs are polished and then decorated with paint and embroidery.

Techniques

The basic technique for playing a gong is quite simple. Striking its center with a large, soft mallet produces the most recognizable sound. However, many extended techniques have been developed in order to produce sound effect timbres. These techniques include scraping the gong with a metal claw or striking it with various odd-shaped mallets.

Articulations

See the table of articulations starting on page 76.

Koto

Origins

The koto was introduced into Japanese culture in the 7th or 8th century, probably from China. Repertoire was passed down by apprenticeship. Originally reserved for the royal court, Yatsuhashi Kengyo, a blind koto player, made the effort to increase the instrument's accessibility among the common people.

Construction

The koto is an table zither of approximately 180 centimeters with 13 strings. The hollow body is made of paulownia wood (a deciduous tree native to Asia). Sound resonates from sound holes carved on the side at each end of the body. All strings are the same length. They are connected to each end of the body with anchored bridges, while adjustable bridges for every string called ji elevate each string from the body. Tuning is created by adjusting positions of the ji along the body to create variations in fundamental pitch for each string.

Techniques

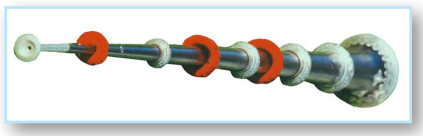
Traditionally, it is played seated on the floor. The player uses small picks called tsume attached to the thumb, index, and middle finger of the right hand to pluck the string on the right hand side of the ji. At the same time, the left hand pushes away (to decrease pitch) and pulls towards (to increase pitch) the strings on the left hand side of the ji to create melody.

Articulations

See the table of articulations starting on page 77.

Rag Dung

Origins



The rag dung is used in a specific ritual by a mysterious sect of the Karma Kaputa Tibetan monks.

Construction

Constructed from copper and range anywhere from 1 to 6.5 meters, they are built in sections so that they can be telescoped for easier transportation. The shorter horns are used to create higher tones, while the longer drones are used to create the fundamental droning pitches.

Techniques

Circular breathing is required to create the uninterrupted drones, which are played in intervals of thirds or fifths.

Articulations

See the table of articulations starting on page 79.

Shakuhachi

Origins

Ancient origins of the shakuhachi can be traced to Korea and China—although centuries of tradition have resulted in an instrument with construction and technique much different from its ancestors. The shakuhachi is depicted in Japanese sacred art as far back as the 8th century. It earned a reputation as a spiritual meditation instrument of the travelling Komoso (a Fuke sect of Zen Buddhist monks), whose meditation pieces for the shakuhachi were called honkyoku. The honkyoku songs are arrhythmic, and many are very technically demanding. During the Meiji period, the Fuke sect was abolished, and so shakuhachi performance was temporarily forbidden. Modern shakuhachi performances consists of both solos and ensembles.

Construction

The shakuhachi is a hollowed-out bamboo tube with 4 holes in front and one in back. The word "shakuhachi" can be divided into two parts, "shaku" and "hachi," and both relate to measurement. One shaku is equal to 30 centimeters (.994 feet). Hachi is the number 8. The length of 1.8 shaku equals 54 centimeters, the most common length of the shakuhachi.

While most bamboo shoots are cut at 1.8 shaku, the bamboo shoots vary in length between joints and so graduated sizes are manufactured in tenths of a shaku—1.8, 1.6 (E), 2.1 (B), and 2.4 (A) . The larger the instrument the lower the pitch. The lip which the player blows out of is sharped so as to achieve maximum precision in pitch definition.

Techniques

The shakuhachi is held vertically and end blown, much like a recorder. The most common range is 2 octaves plus a fifth. The five holes are tuned to a pentatonic scale, and any note can be bent in pitch by up to a full tone, so it is possible to play a complete chromatic scale. Additional tones outside the basic range of the instrument are obtained by partially covering the holes of the instrument and changing the blowing angle.

Articulations

See the table of articulations starting on page 80.

Shamisen

Origins

The shamisen's ancient origins can be traced to China. It evolved from the Chinese instrument called the Sanxian, and was brought from China to the Southern Islands of Ryukyu and was then imported into Japan. shamisen is the principal instrument of the Japanese musical theater called Kabuki. The shamisen is played in the debayashi (the main music ensemble of the Kabuki) on a raised platform on the right side of the stage. Shamisen is found in both the nagauta and joruri styles of Japanese music. In the

latter part of the seventh century, nagauta, known as long song, consisted of a lyrical and simple style. joruri accompanies a narrator during a play of the joruri theatre. The modern style of shamisen playing, known as tsugaru-jamisen, evolved in the early part of the 20th Century from the interpretation of traditional folk songs by a blind man, Chikuzan Takahashi. The tsugaru-jamisen style is very improvised and has a bluegrass flavor with a lot of flashy finger work.

Construction

The shamisen is a three-stringed instrument almost one meter in length. The top, similar to the violin's scroll is called a tenjin, which connects to a neck called the sao, which, in turn, is joined with the body called the dou. This dou has a drum shape manufactured of wood. It is covered on either side with cat or dog skin, which amplifies its sound. Both neck and body are detachable to assist in transportation. The strings are manufactured from silk. A characteristic buzzing sound, called shawari, is created when the bottom string travels over a hump. The bachi is the pick used to strike the strings. It can be fashioned from a variety of different sources: wood, plastic, or other natural materials.

Techniques

Shamisen is most commonly used to accompany a singer as described in the styles above, though in more modern eras it has evolved into a solo classical instrument. There are three main tunings:

7. Hon chosi (main tuning): I - IV - I
8. Niagari (raising the second string): I - V - I
9. San sagari (also lowering the third string): I - V - VII

Articulations

See the table of articulations starting on page 77.

Taiko Drums

Origins

Taiko drums are native to the Japanese culture and date back to well before the 6th century. One of the first uses of taikod was as a battlefield instrument. They were primarily used to intimidate and scare the enemy. The modern version of the taiko is a design that is only about 100 years old.

Construction

Literally, the Japanese word "taiko" means "fat drum," although there is a vast array of shapes and sizes of these drums. Typically the taiko drum is made from carved wood in a barrel-like shell with animal skin on both sides of the drum.

Techniques

The taiko drums are typically played with wooden sticks that are heavy and large in diameter. There are two basic ways to strike the taiko drum. Most tradition taiko drum

patterns require the player to strike the drum on the animal skinned head and on the wood shelled body. All the RA samples were recorded from one large drum. More taikos can be found in Stormdrum 2 and EWQL Symphonic Orchestra.

Articulations
See the table of articulations starting on page 76.

Vietnamese Jaw Harp

Origins

Dan Moi (Vietnamese Brass Hmong Harps) are made by a Hmong tribe of the northern mountains of Vietnam. Dan Moi means "Lip instrument." It is made of curled brass and is much lighter gauge than the Chong Moua Lee design. The Dan Moi is a courting instrument. It has a delightful sound for when lovers would play music to communicate with each other.

Construction
It is made out of a thin piece of brass with a flexible metal tongue in the middle. When you finish playing, you tuck it into a bamboo case decorated with colorful ribbon.

Techniques
It is played against the lips instead of the teeth. It gives a rewarding sound, full of brilliant harmonics, but it is fragile and must be treated with care.

Articulations
See the table of articulations starting on page 78.

Instruments of India

Bansuri

Origins

Being a transverse flute, the bansuri is one of the most ancient of musical instrument designs. In India, the bansuri has a rich history of the folk musics of India, both sacred and secular. It has a special connection to Lord Krishna; as the legend goes, Krishna is a sheepherder with magical powers who plays the flute.

In modern Indian times, it is used in folk, popular, religious, and classical music. Panna Lal Ghosh earned a great deal of credit for making the bansuri flute popular this century in Indian classical music, and also in his additions to the design of the modern bansuri. The name "bansuri" comes from two Hindi words: "banse," which means bamboo, and "sur," which means melody.

Construction
It is made of bamboo (or occasionally of reed) and sealed on one end with six uniformly placed holes. Due to its ability to create overtones where a metal flute cannot, bamboo

is the preferred source of material. Traditionally close to 33 centimeters in length, longer lengths create lower pitches. In more modern times, many bansuris have an added seventh finger hole, which adds fllexibilitiy and control as well as extending the upper registers into a third octave.

Techniques

In Hindustani music, the range is two octaves. Essential elements of flute technique include proper breath and tongue techniques. Modulation of tone and timbre, such as glissando and half tones, can be achieved by partially covering holes. Recently, the bansuri has been used in film scores, to achieve shakuhachi-type overblown effects.

Articulations

See the table of articulations starting on page 87.

Electric Baritone Violin

Origins

The electric baritone violin is a 7-string instrument of recent origin. It is very popular in modern South Indian music.

Construction

It is a 7-string violin with a wide bridge and an electronic pickup.

Techniques

Technique is similar to a violin, except more chordal music can be achieved because of the extra strings. The extended scale (in its low notes) is well suited to the mysterious melodies of India. In RA we used the pickups, Neumann mics, and a guitar amp to get the sound you hear.

Articulations

See the table of articulations starting on page 81.

Esraj

Origins

Of Indian origin, the esraj is approximately 200 years old. It is used in central and eastern regions of India, while the dilruba is found throughout the north. The esraj is used in a wide variety of musical genres—and it happens to be Sri Chinmoy's instrument of choice!

Construction

The esraj is half sitar (the neck) and half sarangi (the resonator and body). It is also considered the twin sibling to the dilruba; the main differences in construction are in the tuning peg construction and the use of sympathetic strings. It is made entirely of wood, and has a resonator on the body

made from a stretched animal skin. Its long neck has 20 frets, 4 playable metal strings, and 12 to 15 sympathetic strings. It is played with a violin or sarangi bow.

Techniques

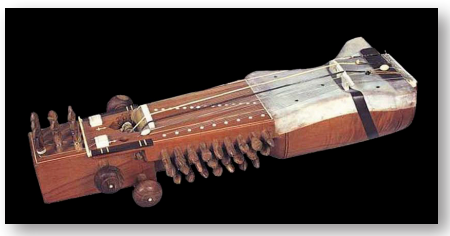
The esraj is so similar to the dilruba that if you learn either you can trade off easily between the two. The frets on the esraj are used primarily as pitch guidelines, proper technique does not require that they be played. The left hand rests on the strings lightly above the fret. The right hand holds the bow. It is played while sitting on the floor, and it rests between the legs, much like a cello.

Articulations

See the table of articulations starting on page 82.

Sarangi

Origins



Many of India's musical instruments -- especially those ones that are bowed -- are said to originate from the dhanuryantram, otherwise known as the bow and arrow. The reverberating sound of the arrow leaving the bow is said to have inspired many early native tribes to create bowed instruments. The sarangi has a deep history; the instrument is so old that there are many theories as to its origins: many are grandiose legends, and there are none that are known to be true. One legend tells of a physician who one day, weary from travelling and seeking shelter from the hot sun, lay down in the shade of a tree to rest. As he was drifted asleep, he heard an enticing musical sound from the forest. Leaving his shady resting spot, he sought out to find the source of this sound. After travelling into the forest for a while, the physician came upon the skin of a dead monkey gently caressing the branch of a tree in the breeze. Inspired by the soulful nature of this phenomenon, the physician created the sarangi. Another tales replaces the physician with Boo Ali Ibn Sina, an Egyptian disciple. Whatever the ancient origin, the sarangi is the most famous bowed instrument of Indian music. Today it is played in North Indian (Hindustani) music.

Construction

The sarangi has a neck and body constructed from tun wood, a resonator made from animal skin, 3 playable metal strings, and 30–40 sympathetic strings. It is played with a bow that looks similar to a violin bow, but the horse hair tapers towards the wood as it gets closer to the tip and is also heavier at that end.

Techniques

Traditionally played seated, the instrument rests on the thigh. While the left hand holds the neck and plays melodies, the right hand holds the bow palm upwards. The left hand plays the playable strings with the top of the fingernails; talcum powder is used to ease the friction of sliding up and down the string.

Articulations

See the table of articulations starting on page 84.

Sitar

Origins

The sitar came from the Indo-Pakistan subcontinent during the collapse of the Mughal Empire in the 17th century. Persian lutes were used in the Mughal courts for centuries, and it is evident that the sitar evolved from these. A 18th century fakir named Amir Khursru is accredited with the first sitar design said to be developed from the Pesian Sehtar. Khursru's grandson, Masit Khan, continued in the family tradition. Khan is recognized as one of the most influential musicians in the development of this early sitar design, and his style of compositions are remembered today as Masitkhani Gat. In modern times, the sitar is used in Hindustani (northern) classical Indian music.

Construction

The sitar is a fretted, long-necked, stringed instrument made of tun or teak wood with a resonator typically made of a gourd. Most designs have 20 strings: 7 playable and 13 sympathetic. The 20 Frets are raised to allow room underneath for sympathetic strings to pass. And they are and adjustable for more accurate tuning.

Fine tuning is accomplished via beads at the base of the bridge and with the pegs. It is characteristically difficult to tune. A plectrum, called a mezrab, is used by the right hand to pluck the strings, while the left hand plays on the neck.

Techniques

The 7 playable strings are set up as follows: 3 strings cover the upper three octaves, 3 strings, called cikari, are designated rhythm strings, a seventh string covers the lower bass octave. The sitar, as with most Indian Classical instruments, is learned during an apprenticeship with a master of the instrument over a long period of time.

Articulations

See the table of articulations starting on page 86.

Tablas

Origins

The Tabla is the most popular percussion instrument used in north Indian classical music. The exact origin of the Tabla is not known for sure. It is surrounded in mystery and there are many theories as to its birth. The tabla is shown in temple carvings which date to around

the second century C.E. It is difficult to know how the Tabla was invented as there are so many stories about its origin.

Construction

The name "tabla" describes the arrangement of two drums. The danya, made of wood, is the high pitched one, and the baya, made of metal, is the low pitched one. Both of the bowl shaped drums feature a very complex drumhead, made from five section of membrane, fastened to the body with rawhide straps. Wooden dowels are inserted in between the rawhide straps and the drum shell to change the tension on the head, thereby affecting the overall pitch of the drum.

Techniques

Each movement or position of the hand on the tabla produces a different sound and has a specific name or syllable (called a bol). For this library we have included a variety of sounds that make up almost the entire tabla alphabet.

Articulations

See the table of articulations starting on page 85.

Tambura

Origins

The tambura is used in both Hindustani (northern) and Carnatic (southern) Indian classical musics. In northern India it is known as "tanpura," in southern India it is called "tambura."

Construction

This is a long-necked, four-stringed, wooden instrument with no frets. The jawari or flat bridge on which the strings rest increases the width of the string vibration, which is the characteristic sound of the warm drone of the tambura. Three of the four strings are made of steel; the fourth is made of brass.

There are three different constructions of the Tambura:

- The northern Indians use the miraj style. Between 1 and 2 meters, the main body is made of teak or tun wood and the resonator section is made from a gourd.
- The southern Indians use the tanjore style. Also being between 1 and 2 meters with the main body made of teak or tun wood, it is similar, but the tanjore style differs in that the long neck narrows at the head and the resonator section is constructed from wood.
- The tampuri style is smaller in size, less than 1 meter. the resonator is smaller, and its construction entirely from wood increases its durability. The smaller size makes it easier to transport.

Techniques

Tuning for the four strings are in the dominant, tonic, tonic, tonic order and are plucked very softly to create a drone. The tambura is the main instrument to accompany vocal performance in Indian classical music. The resonator is placed on the right thigh and held upright while playing.

Articulations

See the table of articulations starting on page 86.

Instruments of the Middle East & Turkish Empire

Qandahar Dumbek

Origins

Arabian in origin, the dumbek is commonly found in Turkey, the Balkan countries, and North Africa. This large and deep sounding dumbek comes from Iraq.

Constructions

The body of the dumbek is shaped like an hourglass and is typically made from nickel, ceramic, or compressed aluminum. The instrument we sampled for this library was made of metal and much larger then most typical dumbeks, thus giving a much lower fundamental pitch.

Techniques

The name "dumbek" is derived from the two basic techniques of striking the drum: "dum" is the bass tone and "bek" is the high-pitched crack sound made by striking the drum towards the edge of the drumhead. We have also sampled a number of non-traditional techniques for the purpose of this library.

Articulations

This drum does not use separate articulation files. The different articulations are assigned to individual notes.

Duduk

Origins

The Armenian duduk—"dziranapogh" is a traditional Armenian name meaning apricot pipe—has perhaps the richest and oldest history of all of the double-reed woodwind instruments, stretching back before the common era. "Duduk" is the adopted name taken from a Russian pipe instrument called "dudka." The duduk design emigrated from Armenia to many other countries. In Turkey, it is called a mey; in Iraq and Iran it is called a balaban; in Georgia a dudki; in Azerbaijan a balamam; and it is also found in derivatives form throughout areas such as Persia and the Balkans. Many consider the duduk the heart and soul of Armenian

music. For RA, we sampled 3 duduks: one from Armenia, one from Turkey, and one small duduk from Bulgaria.

Construction

In ancient times, it was constructed from bone; today, the double-reed wind instrument is most commonly constructed from aged apricot wood. There are 8 holes on the front, and on the back there is a thumb hole. An additional tuning hole is constructed on the horn end of the instrument and, depending on the maker, can be on the front or back. Sizes vary, the most common being 28, 33, and 40 cm. The ramish (the double reed) is anywhere from 9 to 14 cm in length and consists of two pieces of cane cut from a reed of the shores of the Arax River in Armenia. The reeds are assembled in a duck-billed configuration. Tuning the Duduk is accomplished with an adjustable wood binding which surrounds the ramish. Sliding this binding along the ramish opens or closes the reeds. The reed is generally wider than most reeds, which gives it its characteristic mournful sound.

Techniques

The instrument is diatonic in its scale and has the range of one octave. Notes outside of the pentatonic range are achieved with special fingering techniques. The width of the reeds demands more breath from the player. An adjustment in pressure from the lips and adjustment in finger position create variations in dynamics. Most commonly, the duduk is performed in pairs. One player performs the melody of the song, while another player, called the damkash, uses circular breathing to perform the dam, a constant tonic drone.

Articulations

For the Armenian duduk, see the table of articulations starting on page 93. The Bulgarian duduk starts on page 95. The Turkish duduk starts on page 97.

Middle Eastern Fiddle and String Section

Origins

European strings were first introduced to the Middle East during Napoleon's failed attempt at capturing Egypt in 1798.

Construction

The construction is the same as European violins and cellos.

Techniques

Violin techniques include the European under-the-chin-style of playing, and a knee-held style, called the "gamba" style. Turkish tuning for the violin, GDAD, differs slightly from the European GDAE tuning. Arabic tuning differs slightly still, being GDGD. Characteristic performance techniques are very decorative with melismas, slurs and slides, trills, wider vibrato, and double stops. Because of the fretless design of the

violin, it is easily able to adapt to playing in the quartertone structures of the maqam. The ensemble in RA was recorded with 4 violins on the left and 3 cellos on the right playing one octave below.

Articulations

See the table of articulations for the Mid East Fiddle starting on page 88. The table of articulations for the whole string section start on page 89.

Ney Flute

Origins

Tomb paintings of the pyramids of Ancient Egypt dating between 3,000 and 2,500 B.C.E. depict ney flute players, and archaeological excavations at Ur, an ancient city in Mesopotamia, now known as Iraq, have uncovered early specimens of the ney flute. It is common throughout the Arabic world, Persia, and Turkey. "Ney" is the Farsi word for reed, so the flute is named after a plant from which it is fashioned.

Construction

Traditionally cut from a nine-segment section of the Arundo donax plant taken from the Nile River, the ney is an end-blown flute with six finger holes on the front and one thumb hole on the back. On the front, the hole closest to the mouthpiece is partially open, while the rest are fully open. The embouchure is bevelled, and in modern times is fitted with turned wood, bone, and horn. Traditional Egyptian neys have wire wrapped at the mouthpiece end of the flute to add decoration and support to the flute's construction. Emblems at the mouthpiece end signify the flute's key signature and/or signature of the flute maker. These are etched and ink-filled or burned in.

Techniques

Different lengths determine pitch and most players have a set of flutes to play in different keys. Accomplished players, though, can achieve a 3-octave range on one ney through advanced finger and blowing techniques. The rast mode is the Arabic maqam mode easiest to achieve from the ney: for those of you with a more Euro-centric worldview, the rast is the same as the dorian mode. The bridge is a characteristic polyphonic mode of the ney; it is achieved when the ney player plays the same note an octave apart. Characteristically, the player plays notes within the musical range of the instrument plus their sub-harmonics to achieve the bridge.

Articulations

See the table of articulations starting on page 96.

Oud

Origins

The oud is a short-necked, half pear-shaped, plucked lute of the Arab world, a direct ancestor of the European

lute. It first appears in Mesopotamia during the Kassite period (1600–1150 B.C.E.) with a small oval body. The oud's name derives from the Arabic for wood, which refers to the strips of wood used to make its rounded body. It is the principal instrument of the Arab world, and is of secondary importance in Turkey (ud), Iran, Armenia, and Azerbaijan. It is known both from documentation and through oral tradition, as the king, sultan, or emir of musical instruments, the most perfect of those invented by the philosophers.

Construction

There are five pairs of strings on an oud, each pair tuned to the same pitch, plus a single string, which is the thickest and known as the "bamteli" in Turkish. The most common way to tune the oud is with each string a fourth apart. The neck of the oud, which is short in comparison to the body, has no frets and this contributes to its unique sound. The most common string combination is five pairs of strings tuned in unison and a single bass string, although up to thirteen strings may be found. Strings are generally made of nylon or gut.

Techniques

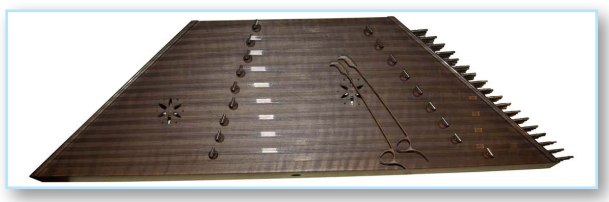
Different tunings are used. The Turkish-style oud has a brighter tone than its Arab counterpart, partially because of higher tuning. In RA, we use the Arabic oud. The strings are traditionally plucked using an eagle's feather, known in the Arab world as a risha—and in Turkey as a mizrap. However, eagle feathers are not readily available nowadays, so modern players have looked to other materials from which to fashion a pick. Many professional players use a risha made from horn (of a cow, for example). To ensure that the oud is at a comfortable height, many players use a footstool of the type used by classical guitarists, but some players simply cross one leg over the other. The face of the oud should be vertical with the strings and neck horizontal.

Articulations

See the table of articulations starting on page 91.

Santour

Origins



"Santoor" is a Persian word meaning one-hundred strings; its Sanskrit name, "shata tantri veena," means a hundred-stringed lute. Ancient origins can be traced back to the Sufi mystics who used the 100-stringed instrument as an accompaniment to the sacred hymns of the music they called "Sufiana Mausiqi." The early Persian origins date back to the 16th century and depict a plucked instrument. By the 17th century the modern design—still in use today—is the 72-string santour, as it is called in Iran, Iraq, and Turkey. Being a member of the hammer dulcimer family of instruments, derivatives found around the globe include the 45-stringed Chinese yangqin, the 135-stringed German Hackbrett, the Greek santoori, the Finnish kentele, the Hungarian cimbalon and the Indian santoor.

Construction

The santour is a wooden instrument with steel strings. The frame is most commonly constructed from walnut or maple while the top and bottom consist of veneer or plywood. Most commonly, 29 wood bridges (although 31- and 33-bridged santours exist) rest on the sounding board (top) of the instrument and support the strings. Strings are attached to either side of the sounding board by pins. The Persian santour has adjustable bridges to aid in tuning, while others, such as the Indian Santoor, have fixed bridges. Other versions have tuning pins for each string on the right side of the sounding board. In the Indian design, each bridge holds 3 strings which are tuned to the same pitch. The frame is trapezoidal in shape, so string length at the base are longer and therefore lower in pitch than strings at the top. Light wood mallets are used to strike the strings.

Techniques

Mallets are held by both the left and right hands. They are used to strike the string lightly. Playing the mallets in close or far proximity to the bridges can create very different timbres. Muted tones are created when one hand mutes the strings in various positions while the other strikes the strings creating a different timbre at each position.

Articulations

See the table of articulations starting on page 92.

Yali Tambur, or Yayli Tanbur

Origins

The yali tambur is a Turkish instrument of ancient origin.

Construction

The soundbox is of a drum-like banjo design: a round metal body covered with an animal skin. It is a stringed instrument with sympathetic strings in addition to the playable strings.

Techniques

The yali tambur is played with a bow and plucked. Often the drone string is plucked repetitively while the other strings are bowed.

Articulations

See the table of articulations starting on page 90.

Zourna

Origin

Ancient origins date back to the 9th century where the zourna is mentioned in the Armenia tale “David of Sasoun,” which has become symbolic for the struggle for emancipation of the Armenian nation. The zourna is widely used in Armenia and

Bulgaria. Derivatives are found in many places including India (shenay), Greece (zourna), Yugoslavia (zurla), France (bombarde), Tunis (zokra), Iran (tzurnay), Lebanon and Iraq (zamr), Morocco (ghaytah or raita), and Turkey.

Construction

In Armenia, the zourna is traditionally constructed from the wood of an apricot tree, while derivatives in other countries are constructed from the woods of plum, walnut, and saber trees. There are seven holes in front and one in back with an additional tuning hole at the horn end (kalak). Wider finger holes allow for one to achieve chromatic tones more easily. The zourna is constructed in different sizes ranging from 30 to 60 centimeters. Different lengths of the instrument determine different ranges of pitch. The metem is the protruding tube at the reed end of the horn. On the metem, the avurtluk is a hollowed-out circular tube designed to assist the player in circular breathing. The ramish, or reed, consists of two elements. A piece of flattened cane makes up the reed portion, which attaches to a circular tube of metal forming the mouthpiece.

Techniques

Characteristically a very loud instrument, proper technique requires heavy air pressure and circular breathing. Due to the loud volume of the instrument, it is traditionally played outside during festive and celebratory events. With an approximate range of one octave, partially covering finger holes, known as half-holing, allows the performer to obtain chromatic pitches outside the range of the horn. Much like the duduk, the zourna is often played in pairs: one player, called the damkash, sustains a dam (drone) while the other performs the melody. Traditionally, it is almost always accompanied by the Armenian dhol drum.

Articulations

See the table of articulations starting on page 98.

PLAY

5. Articulations and Keyswitches

Click on this text to open the
Master Navigation Document

Instruments, Articulations, Keyswitches

This chapter provides tables that lists each instrument in the RA library. You might want to print out the pages containing these tables as a reference.

The Tables of the Instruments

The sounds of each instrument are provided in the form of one or more instrument files (with extension .ewi in the Browser view). All of these instrument files are listed below. They are grouped into geographical regions and then, generally, into tables based on the way they are played: bowed instruments, plucked instruments, wind instruments, percussion, and so on.

Each entry for a keyswitch file includes a list of its keyswitch notes with their articulations. Each entry for a Live articulation file includes information on its velocity switches or round robin switches. Note names, such as C0 and D#1, are the keyswitches. "Vel 1" and "Vel 2" are velocity switches. Names with RR are round robin files. Learn more about such features in the PLAY System manual, the companion volume to this one. And read the section on Instrument Types, which starts on page 21, to find out about how Keyswitch, Live, and Big files are used in the RA library, as well as what to expect in the Elements folders.

The number to the right of an instrument's name is the page number in this manual where the instrument is described. When reading this manual on the computer screen, click on one of those numbers with the mouse cursor to be taken directly to that page. Note that a few instruments do not have this type of description, so have no page number.

Finally, note that some tables are quite long and extend across multiple pages.

Africa

AFRICA: BELLS	
Ewe Large Bombshell	
Ewe Medium Bombshell	
Gankokwe Large	24
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AFRICA: DRUMS	
3Ft FromTonFrom	26
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Batas	22
Berkete	23
Dejembe Ensemble	24
Ewe Drum Ensemble	24
Kidi	24
Large Udu	30
Log Drums	28

AFRICA: PITCHED PERCUSSION	
Gyil Mallet + Stick	26
Gyil Mallet Untuned	26
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Gyil Stick	26
Kalimba Low Untuned	29
Kalimba Low	29
Kalmiba Hi Untuned	29
Kalmiba Hi	29
Kalmiba Hi-Wah Untuned	29
Kalmiba Hi-Wah	29
Log Drums Melodic	28

AFRICA: PLUCKED	
Kora	27
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AFRICA: SHAKERS AND RATTLES	
African Dual Wooden	
African Metal	
Axatse	24
Ekpiri Shelled BODY	
Ekpiri Shelled Sht	

The Americas & Australia

AMERICAS & AUSTRALIA: PERCUSSION	
Berimbau	31
Basic	
Chrom	
FX	
RR Chrom	
Cuban Percussion	32
RR	

AMERICAS & AUSTRALIA: PLUCKED		
1890 Washburn Guitar		36
Washburn Guitar KS C0-D#0	C0	Finger
	C#0	Pick
	D0	Strum RR
	D#0	Harm
Washburn Guitar Live	Vel 1	Pick
	Vel 2	Slide
Washburn Guitar Elements	Finger	
	Harm	
	Pick RR	
	Strum DN	
	Strum RR	
	Strum UP	

continued

AMERICAS & AUSTRALIA: PLUCKED

American Jawharp		**34**
Jawharp VS		
Jawharp		
Banjo		**31**
Bridge		
Neck		
RR		
Dobro		**33**
Dobro KS C0-D1	C0	Open
	C#0	Slide Slow DN
	D0	Slide P4th UP NVB
	D#0	Slide P4th Up Vib
	E0	Slur UP DN
	F0	Slide WT UP Fall
	F#0	Slide WT UP
	G0	Trem FX WT UP
	G#0	Trem FX
	A0	Slide Fast DN
	A#0	Slide Fast UP
	B0	Slide Power UP A
	C1	Slide Power UP B
	C#1	Slide Full DN
	D1	Slide Full UP
	All	Mute FX
Dobro Live 1	Vel 1	Open
	Vel 2	Slide Perf 4th UP NVB
Dobro Live 2	Vel 1	Open
	Vel 2	Slide WT UP Fall
Dobro Live 3	Vel 1	Open
	Vel 2	Slide WT
Dobro Live 4	Vel 1	Open
	Vel 2	Slur DN UP
Dobro Live 5	Vel 1	Open
	Vel 2	Trem FX

continued

AMERICAS & AUSTRALIA: PLUCKED

Dobro Live 6	Vel 1	Open
	Vel 2	Trem FX WT UP
Dobro Elements	Mute FX	
	Open	
	Slide Fast DN	
	Slide Fast UP	
	Slide Full DN	
	Slide Full UP	
	Slide P4th NV	
	Slide P4th VIB	
	Slide Power UP A	
	Slide Power UP B	
	Slide Slow DN	
	Slide WT UP Fall	
	Slide WT UP	
	Slur UP DN	
	Trem FX WT UP	
	Trem FX	
Mandolin		**35**
Mandoline KS C0-E0	C0	Sus RR
	C#0	Slide UP
	D0	Trem Slow
	D#0	Trem Fast
	E0	Live 2
Mandoline Live 1	Vel 1	Sus RR
	Vel 2	Trem Slow
Mandoline Live 2	Vel 1	Sus RR
	Vel 2	Slide UP
Mandoline Elements	Mandolin Noises	
	Mandolin Slide UP	
	Mandolin Sus RR	
	Mandolin Trem Fast	
	Mandolin Trem Slow	

continued

AMERICAS & AUSTRALIA: PLUCKED

Ukulele, also Ukelele		37
Pick DN		
Pick RR		
Pick UP		

AMERICAS & AUSTRALIA: WIND

Didjeridoo, also Didgeridoo		33
Drones A		
Drones C#		
Drones D		
Drones F#		
Drones Live	Selected Drones A, C#, D, F#	
Drones FX A		
Drones FX C#		
Drones FX D		
Drones FX F#		
Didjeridoo Grooves	Loop A 100bpm	
	Loop A 135bpm	
	Loop A 160bpm	
	Loop A 165bpm	
	Loop A 95bpm	
	Loop C# 100bpm	
	Loop C# 115bpm	
	Loop C# 120bpm	
	Loop C# 125bpm	
	Loop C# 139bpm	
	Loop C# 140bpm	
	Loop C# 160bpm	
	Loop C# 165bpm	
	Loop C# 185bpm	
	Loop C# 201bpm	

continued

AMERICAS & AUSTRALIA: WIND

Didjeridoo Grooves (continued)	Loop C# 73bpm	
	Loop C# 74bpm	
	Loop C# 80bpm	
	Loop D 100bpm	
	Loop D 103bpm	
	Loop D 122bpm	
	Loop D 128bpm	
	Loop D 130bpm	
	Loop D 150bpm	
	Loop D 156bpm	
	Loop D 170bpm	
	Loop D 77bpm	
	Loop D 80bpm	
	Loop D 88bpm	
	Loop F# 105bpm	
	Loop F# 115bpm 6-4	
	Loop F# 115bpm	
	Loop F# 130bpm	
	Loop F# 74bpm	
	Loop F# 80bpm	
	Loop F# 85bpm	
	Loop F# 95bpm	
First Nations Cedar Flute		**34**
FNC Flute KS C0-G#0	C0	Leg Vib Exp
	C#0	Leg Non Vib
	D0	Leg Exp 2 RR
	D#0	Non Vib Exp
	E0	Exp Vib 1
	F0	Stac
	F#0	Exp Melody 1
	G0	Exp Melody 2
	G#0	Flutter

continued

AMERICAS & AUSTRALIA: WIND		
FNC Flute Live	Vel 1	Leg Vib Exp
	Vel 2	Exp Melody 2
FNC Flute Elements	Exp Melody 1	
	Exp Melody 2	
	Flutter	
	Leg Non Vib	
	Leg Vib Exp	
	Non Vib Exp	
	Stac	
	Vib Exp 1	
	Vib Exp 2 RR	
Pan Flute		36
Pan Flute KS C0-D#0	C0	Sus Vib
	C#0	Non Vib
	D0	NV VB MOD
	D#0	Stac RR
Pan Flute Elements	Non Vib	
	NV VB MOD Acc	
	NV VB MOD	
	Stac NV RR	
	Stac	
	Sus Vib	

Europe

EUROPE: BOWED		
Gadulka		39
Gadulka KS C0-F0	C0	Sus Vib 1
	C#0	Non Vib 1 + 2 RR
	D0	Dbl Bow Exp
	D#0	Bow Dn + Up RR
	E0	Tremolo
	F0	Stac
Gadulka Live	C0	Leg Vib 1
	C#0	Dbl Bow Exp

continued

EUROPE: BOWED

Gadulka Elements	Bow Dn	
	Bow Up	
	Dbl Bow Exp	
	Non Vib 1	
	Non Vib 2	
	Resonance	
	Stac	
	Sus Vib 1	
	Sus Vib 2	
	Trem	
Hardanger Fiddle		**40**
Hardanger Fiddle KS C0-G#0	C0	Sus Vib
	C#0	Leg Non Vib RR
	D0	Exp Vib
	D#0	Exp Non Vib
	E0	Short RR
	F0	Spic RR
	F#0	Melody
	G0	Trill HT
	G#0	Trill WT
Hardanger Fiddle Live	Vel 1	Exp Vib
	Vel 2	Trill WT
Hardanger Fiddle Elements	5ths	
	Exp NV	
	Exp Vib	
	Legato NV RR	
	Melody	
	NV VB MOD	
	Short RR	
	Spic RR	
	Sus Vib	
	Trill HT	
	Trill WT	

continued

EUROPE: BOWED

Hurdy Gurdy		40
Hurdy Gurdy KS C0-F0	C0	Non Vib VS
	C#0	Double Low
	D0	Double Hi
	D#0	Drone 1
	E0	Drone 3
	F0	Drone 5
Hurdy Gurdy Live	Vel 1	Drone 1
	Vel 2	Drone 2
	Vel 3	Drone 3
	Vel 4	Drone 4
	Vel 5	Drone 5
	1–3	Double Low
	4–5	Double Hi
Hurdy Gurdy Elements	Double Hi	
	Double Low	
	Drone 1	
	Drone 2	
	Drone 3	
	Drone 4	
	Drone 5	
	Non Vib f	
	Non Vib mf	
	Non Vib mp	
	Non Vib p	
	Nov Vib VS	

continued

EUROPE: BOWED

Hurdy Gurdy Grooves	Groove 01
	Groove 02
	Groove 03
	Groove 04
	Groove 05
	Groove 06
	Groove 07
	Groove 08
	Groove 09
	Groove 10

EUROPE: PERCUSSION

Frame Drum	38
Large Frame Basic	
Large Frame FX	
Medium Frame	
Small Frame	

EUROPE: WINDS & REEDS

Alpenhorn		37
Alpenhorn KS C5-G5	C5	Sus Vib
	C#5	Sus
	D5	Non Vib
	D#5	Exp
	E5	Exp Fast
	F5	Slide Octave DN
	F#5	Slide Octave UP
	G5	Stac

continued

EUROPE: WINDS & REEDS

Alpenhorn Elements	Exp Fast	
	Exp Solw	
	Exp	
	Non Vib	
	Slide Octave DN	
	Slide Octave UP	
	Stac	
	Sus Vib	
	Sus	
Bagpipe Ensemble		
Bag Pipe Ensemble VS Untuned		
Bag Pipe Ensemble VS		
Bass Recorder		**38**
Bass Recorder KS C0-G#0	C0	Sus Vib
	C#0	Exp Vib Fst
	D0	Exp Vib
Bass Recorder Elements	Exp Fst	
	Exp Vib	
	Sus Vib	
Highland Pipes		**43**
Highland Pipes VS		
Irish Low Whistle		**41**
Irish Low Whistle KS C0-B0	C0	Irish Vib
	C#0	Western Vib
	D0	Non Vib
	D#0	Bend WT UP
	E0	Bend HT UP
	F0	Short
	F#0	Stac 3RR
	G0	Exp Melody 1
	G#0	Exp Melody 2
	A0	Exp Melody 3
	A#0	Exp Melody 4
	B0	Exp Melody 5

continued

EUROPE: WINDS & REEDS

Irish Low Whistle Live 1	Vel 1	Sus Vib Fast
	Vel 2	Bend WT UP
Irish Low Whistle Live 2	Vel 1	Sus Vib Fast
	Vel 2	Exp Melody 1
Irish Low Whistle Live 3	Vel 1	Sus Vib Fast
	Vel 2	Exp Melody 5
Irish Low Whistle Elements	Bend HT UP	
	Bend WT UP	
	Exp Melody 1	
	Exp Melody 2	
	Exp Melody 3	
	Exp Melody 4	
	Exp Melody 5	
	Irish Vib	
	Non Vib	
	Sht	
	Stac 1	
	Stac 2	
	Stac RR	
	Sus Acc	
	Western Vib	
Launeddas		**41**
Launeddas KS C0-D0	C0	Non Vib
	C#0	Grace
	D0	Exp Melody
Launeddas Live	Vel 1	Non Vib
	Vel 2	Grace
	Vel 3	Exp Melody
Launeddas Elements	Exp Melody	
	Grace	
	Non Vib	

continued

EUROPE: WINDS & REEDS		
Uilleann Pipes		**42**
Uilleann Pipes KS C0-D#0	C0	Basic VS
	C#0	Vib VS
	D0	Exp Bend VS
	D#0	Live
Uilleann Pipes Live	Vel 1	Basic VS
	Vel 2	Exp Bnd VS
Uilleann Pipes Elements	Drn and Regulators	
	Vib VS	
	Exp Bend VS	
	Basic VS	

Far East

FAR EAST: BOWED		
Erhu		**43**
Erhu KS C0-A0	C0	Sus Vib
	C#0	Exp Vib Soft
	D0	Exp Vib Slow
	D#0	Exp Vib Fast
	E0	Leg
	F0	Non Vib Hard
	F#0	Slide DN 1
	G0	Slide UP 2
	G#0	Stac RR
	A0	Trill
Erhu Live	Vel 1	Exp Vib Soft
	Vel 2	Sus Vib
	Vel 3	Slide UP 1

continued

FAR EAST: BOWED

Erhu Elements	Exp Vib Sft
	Stac DN
	Non Vib Sft
	Non Vib Hrd
	Exp Vib Fst
	Non Vib Med
	Slide DN 2
	Stac RR
	Exp Vib Slw
	Leg
	Slide UP 2
	Trill
	Slide UP 1
	Slide DN 1
	Sus Vib
	Stac UP

FAR EAST: PERCUSSION

Gamelan	44
Byeon FX	
Byeon Group Tuned	
Byeon Group Untuned	
Calung Tuned	
Calung Untuned	
Gamelan Ensemble Tuned	
Gamelan Ensemble Untuned	
Gamelan Gong & Kajar	
Katana Group Tuned	
Katana Group Untuned	
Pamade Tuned	
Pamade Untuned	

continued

FAR EAST: PERCUSSION

Gongs		**45**
Chinese Gong 34 Inches		
Chinese Gong VS		
Thai Gong 23 inches		
Thai Gong VS		
Taiko Drums		**48**
Taiko Drums ALL		
Taiko Drums Elements	Dragon 1	
	Dragon 2	
	Bass Drum	
	Big and Bassy	
	Big Punch	
	Big Resonance	
	Deep And Woody	
	Earthquake	
	Ensemble	
	Hands	
	Light And Bassy	
	Light Sticks	
	Medium Room	
	Medium Sticks	
	Punchy 2	
	Punchy	
	Room ambient	
	Soft 2x Hits	
	Thunder	

FAR EAST: PLUCKED

Koto		46
Koto KS C0-F#0	C0	Sus Vib
	C#0	Exp Vib
	D0	Non Vib
	D#0	HT UP
	E0	Pick Scrape
	F0	DBL Hit
	F#0	Trem
Koto Live 1	Vel 1	Non Vib
	Vel 2	Sus Vib
	Vel 3	HT UP
	Vel 4	DBL Hit
Koto Live 2	Vel 1	Non Vib
	Vel 2	Sus Vib
	Vel 3	HT UP
	Vel 4	Pick Scrape
Koto Elements	Arp	
	DBL	
	Exp Vib	
	HT UP	
	Non Vib	
	Pick Scrape	
	Sus Vib	
	Trem	
Shamisen		**47**
Shamisen KS C0-E0	C0	Pick Soft
	C#0	Sus
	D0	Vib Fast
	D#0	Soft Vib
	E0	Slur
Shamisen Live 1	Vel 1	Pick Soft
	Vel 2	Sus
	Vel 3	Slide Up

continued

FAR EAST: PLUCKED

Shamisen Elements	Pick Soft	
	Slur Vib Fast	
	Slur	
	Sus	
	Vib Fast	
	Vib Soft	
Vietnamese Jawharp		**49**
Jawharp RR		
Jawharp		

FAR EAST: WINDS

Dizi		**43**
Dizi KS C0-A#0	C0	Sus Vib
	C#0	Exp Vib 1
	D0	Exp Vib 2
	D#0	Legato
	E0	Non Vib
	F0	Stac Trill
	F#0	Trill
	G0	Trem
	G#0	Flutter
	A0	Melody 1
	A#0	Melody 2
Dizi Live 1	All	Trem
	All	Legato

continued

FAR EAST: WINDS		
Dizi Live 2	Vel 1	Sus Vib
	Vel 2	Stac Trill
Dizi Elements	Exp Vib 1	
	Exp Vib 2	
	Flutter	
	Legato	
	Mldy 1	
	Mldy 2	
	Non-vib	
	Stac Trill	
	Sus Vib	
	Trem	
	Trill	
Rag Dung		**46**
Rag Dung KS C0-D0	C0	Non Vib 1,2,3
	C#0	Sus Vib Slow
	D0	Sus Vib 1,2,3
Rag Dung Elements	Non Vib 1	
	Non Vib 2	
	Non Vib 3	
	Non Vib 4	
	NV 4-Way RR	
	Stac 1	
	Stac 2	
	Stac 3	
	Stac RR	
	Sus Vib Slw	

continued

FAR EAST: WINDS

Shakuhachi		47
Shakuhachi KS C0-C#1	C0	Sus Vib
	C#0	Exp Vib
	D0	Leg Vib
	D#0	Leg Non Vib
	E0	Non Vib
	F0	Overblown 2
	F#0	Overblown 1
	G0	Spit 4RR
	G#0	Harm FX
	A0	Trill
	A#0	Melody 1
	B0	Melody 2
	C1	Melody 3
	C#1	Melody 4
Shakuhachi Live	Vel 1	Sus Vib
	Vel 2	Exp Vib
	Vel 3	Leg Vib
	All	Split 4RR
Shakuhachi Elements	Exp NV	
	Harm FX	
	Leg NV	
	Leg Vib	
	Leg NV VB MOD	
	Melody 1	
	Melody 2	
	Melody 3	
	Melody 4	

continued

FAR EAST: WINDS	
Shakuhachi Elements (continued)	Non Vib
	Overblown 1
	Overblown 2
	Spit 2RR
	Spit 4RR
	Spit 6RR
	Sus Vib
	Trill

India

INDIA : BOWED		
Baritone Violin		50
Baritone Violin KS C0-A0	C0	Leg NV RR
	C#0	Sus Leg RR
	D0	Leg Exp
	D#0	Lyrical
	E0	Exp Vib
	F0	Fls Harm
	F#0	Marc
	G0	Stac RR
	G#0	Spic RR
	A0	Ornament
Baritone Violin Live 1	Vel 1	Exp Vib
	Vel 2	Sus Leg DN
Baritone Violin Live 2	Vel 1	Sus Leg DN
	Vel 2	Ornament

continued

INDIA : BOWED

Baritone Violin Elements	Exp Vib	
	Lyrical	
	Marc	
	Ornament	
	Fls Harm	
	Leg Exp	
	Leg NV RR	
	Spic RR	
	Stac RR	
	Sus Leg RR	
Esraj		**50**
Esraj KS C0-E1	C0	Sus
	C#0	Leg Fast
	D0	Leg 2
	D#0	Leg 3
	E0	Leg 4
	F0	Slide HT UP
	F#0	Slide HT DN
	G0	Slide WT UP
	G#0	Slide WT DN
	A0	Slide Min 3rd UP
	A#0	Slide Min 3rd DN
	B0	Slide Maj 3rd UP
	C1	Slide Maj 3rd DN
	C#1	Slide Perf 4th UP
	D1	Slide Perf 4th DN
	D#1	Trill HT UP
	E1	Trill HT DN
Esraj Live 1	RR 1	Sus
	RR 2	Leg 1
	RR 3	Leg 3
	RR 4	Leg 2
	RR 5	Leg 4

continued

INDIA : BOWED		
Esraj Live 2	Vel 1	Leg Fast
	Vel 2	Sus
	Vel 3	Slide HT UP Fast
	Vel 4	Trill HT UP
Esraj Elements	Leg 1	
	Leg 2	
	Leg 3	
	Leg 4	
	Slide 4th DN	
	Slide 4th UP	
	Slide HT DN	
	Slide HT UP Fast	
	Slide HT UP	
	Slide Maj 3rd DN	
	Slide Maj 3rd UP	
	Slide Min 3rd DN	
	Slide Min 3rd UP	
	Slide WT DN	
	Slide WT UP	
	Sus	
	Trill HT UP	
	Trill WT DN	

continued

INDIA : BOWED

Sarangi		51
Sarangi RT		
Sarangi KS C0-C#1	C0	Vib
	C#0	Leg Vib 1
	D0	Leg Vib 2
	D#0	Non Vib 2
	E0	Bend DN
	F0	Bend UP
	F#0	Trem
	G0	Melody 1
	G#0	Melody 2
	A0	Melody 3
	A#0	Melody 4
	B0	Melody 6
	C1	Melody 7
	C#1	Melody 8
Sarangi Melody KS C0-A0	C0	Melody 1
	C#0	Melody 2
	D0	Melody 3
	D#0	Melody 4
	E0	Melody 6
	F0	Melody 7
	F#0	Melody 8
	G0	Melody 9
	G#0	Melody 10
	A0	Melody 11
Sarangi Live	Vel 1	Vib
	Vel 2	Bend UP
continued		

INDIA : BOWED

Sarangi Elements	Bend DN
	Bend UP
	Leg Vib 1
	Leg Vib 2
	Melody 01
	Melody 02
	Melody 03
	Melody 04
	Melody 05
	Melody 06
	Melody 07
	Melody 08
	Melody 09
	Melody 10
	Melody 11
	Non Vib 1
	Non Vib 2
	Non Vib 3
	Non Vib 4
	Non Vib 5
	Non Vib 6
	Non Vib 7
	Trem
	Vib

INDIA: PERCUSSION

Tablas	52
Tabla & Baya	
Tabla Funky	
Tabla Only	
Tablas Basic	

INDIA : PLUCKED

Sitar		**52**
Sitar KS C0-G0	C0	Sus Down
	C#0	Sus Up
	D0	Slide Up HT
	D#0	Slide Up WT
	E0	FX 1
	F0	FX 2
	F#0	Tremolo
	G0	Trill HT
	G#0	Trill WT
Sitar Live 1	C1–E2	Drone + Sus
	F2–A4	See Vel 1 and Vel 2 below:
	Vel 1	Tremolo + Sus
	Vel 2	Bend + Sus
Sitar Live 2	C1–D#2	Drone + Sus
	E2–A4	See Vel 1 and Vel 2 below:
	Vel 1	Bend + Sus
	Vel 2	Shake + Sus
Sitar Elements	Bends	
	Drone	
	Drop FX	
	FX 1	
	Fx 2	
	FX 3	
	Gliss	
	Slide HT UP	
	Slide WT UP	
	Sus DN	
	Sus RR	
	Sus UP	
	Trem	
	Trill HT	
	Trill WT	
Tambura		**53**
Tambura 4-way RR		

INDIA : WIND		
Bansuri		**49**
Bansuri KS C0-B0	C0	Sus Vib
	C#0	Leg
	D0	Sus Non Vib
	D#0	Exp Harm 1
	E0	Exp Harm FX
	F0	Bend Long
	F#0	Bend WT UP
	G0	Flutter Exp
	G#0	Flutter
	A0	Spit Long RR
	A#0	Spit Short RR
	B0	Turn
Bansuri Live 1	Vel 1	Leg
	Vel 2	Sus Vib
	Vel 3	Exp Harm FX
Bansuri Live 2	Vel 1	Leg
	Vel 2	Sus Vib
	Vel 3	Spit Short 1
Bansuri Elements	Bend Long	
	Bend WT UP	
	Exp Harm 1	
	Exp Harm 2	
	Flutter Exp	
	Flutter	
	Harm FX	
	Leg	
continued		

INDIA : WIND	
Bansuri Elements (continued)	Short Spit 1
	Spit Long 1
	Spit Long 1+2 RR
	Spit Long 2
	Spit Short 1+2 RR
	Spit Short 2
	Sus Non Vib
	Sus Vib
	Turn

Middle East & Turkish Empire

MID EAST : BOWED		
Mid East Fiddle		55
Mid East Fiddle KS C0-A0	C0	Sus Vib
	C#0	Non Vib
	D0	Exp Sfz
	D#0	Slur UP 1
	E0	Slur UP 2
	F0	Slur DN 1
	F#0	Slur DN 2
	G0	Turn 1
	G#0	Turn 2
	A0	Melody Slow
Mid East Fiddle Live	Vel 1	Sus Vib
	Vel 2	Slur HT UP
Mid East Fiddle Elements	Exp Sfz	
	Melody Slow	
	Non Vib F	
	Non Vib M	
	Non Vib P	
	Non Vib VS	

continued

MID EAST : BOWED

Mid East Fiddle Elements (continued)	Slur DN 1	
	Slur DN 2	
	Slur UP 1	
	Slur UP 2	
	Sus Vib	
	Turn 1	
	Turn 2	
Mid East String Section		**55**
Mid East Strings KS C0-F0	C0	Sus Vib
	C#0	Exp Vib
	D0	Leg
	D#0	Slur UP
	E0	Slur DN
	F0	Turn
Mid East Strings Big 1	All	Sus Vib
	All	Leg
Mid East Strings Big 2	All	Exp Vib
	All	Leg
Mid East Strings Big 3	All	Exp Vib
	All	Sus Vib
Mid East Strings Live 1	Vel 1	Sus Vib
	Vel 1	Leg
	Vel 2	Slur UP
Mid East Strings Live 2	Vel 1	Sus Vib
	Vel 1	Leg
	Vel 2	Turn
Mid East Strings Elements	Exp Vib	
	Leg	
	Slur DN	
	Slur UP	
	Sus Vib	
	Turn	

continued

MID EAST : BOWED

Yali Tambur, or Yayli Tanbur		58
Yali Tambur KS C0-A0	C0	Leg
	C#0	Leg Fast
	D0	Exp
	D#0	Exp Vib
	E0	Grace HT
	F0	Slide WT UP
	F#0	Trill HT
	G0	Trill WT
	G#0	Melody HT
	A0	Slide FX
Yali Tambur Live 1	Vel 1	Exp Vib
	Vel 2	Trill HT
	All	Drone
Yali Tambur Live 2	Vel 1	Leg
	Vel 2	Trill HT
	All	Drone
Yali Tambur Elements	Drone	
	Exp Non Vib	
	Exp Vib	
	Exp	
	Grace HT	
	Leg Fast	
	Leg Short	
	Leg	
	Melody HT	
	Slide FX	
	Slide UP HT	
	Slide UP WT	
	Trill HT	
	Trill WT	

MID EAST : PLUCKED

Oud		56
Oud KS C0-F#0	C0	Non Vib RR
	C#0	Vib RR
	D0	Wide Vib
	D#0	Slide UP
	E0	Slide DN
	F0	Trem
	F#0	Trem Vib
Oud Live 1	Vel 1	Non Vib DN
	Vel 2	Non Vib RR
	Vel 2	Vib RR
	Vel 3	Wide Vib
Oud Live 2	Vel 1	Non Vib DN
	Vel 2	Non Vib RR
	Vel 2	Vib RR
	Vel 3	Slide UP
Oud Live 3	Vel 1	Non Vib DN
	Vel 2	Non Vib RR
	Vel 2	Vib RR
	Vel 3	Slide DN
Oud Live 4	Vel 1	Non Vib DN
	Vel 2	Non Vib RR
	Vel 2	Vib RR
	Vel 3	Trem Vib
Oud Live 5	All	Vib RR
	Vel 2	Trem
Oud Elements	Non Vib RR	
	SLD DN	
	SLD UP	
	Trem Vib	
	Trem	
	Vib RR	
	Wide Vib	

continued

MID EAST : PLUCKED

Santoor		57
Santoor KS C0-G#0	C0	Sus RR
	C#0	Mute
	D0	Sfz Exp
	D#0	Exp Short
	E0	Exp Long
	F0	Exp Sfz
	F#0	Exp WT Hard
	G0	Exp WT Soft
	G#0	Trem
Santoor Live 1	All	Sus RR
	All	Exp Short
Santoor Live 2	All	Sus RR
	All	Trem
Santoor Elements	Exp HT Hard	
	Exp HT Soft	
	Exp Long	
	Exp Sfz	
	Exp Short	
	Exp WT Hard	
	Exp WT Soft	
	Mute	
	Sfz Exp	
	Sus 1	
	Sus 2	
	Sus RR	
	Trem	

MID EAST: PERCUSSION

Qandahar Dumbek	54

MID EAST : WIND

Armenian Duduk		54
Armenian Duduk KS C0-C#1	C0	Sus Vib 1
	C#0	Non Vib 1
	D0	Non Vib 2
	D#0	Exp Vib
	E0	Exp Vib Short 1
	F0	Exp Vib Short 2
	F#0	Exp Vib Short 3
	G0	Exp Vib Grace
	G#0	Exp Short HT UP
	A0	Exp Long HT UP
	A#0	EXP WH UP
	B0	Exp Melody 1
	C1	Exp Melody 2
	C#1	Exp Melody 3
Armenian Duduk Melody KS 1 C0-C2	C0	Melody 1
	C#0	Melody 2
	D0	Melody 3
	D#0	Melody 4
	E0	Melody 5
	F0	Melody 6
	F#0	Melody 7
	G0	Melody 8
	G#0	Melody 9
	A0	Melody 10
	A#0	Melody 11
	B0	Melody 12
	C1	Melody 13
	C#1	Melody 14
	D1	Melody 15
	D#1	Melody 16
	E1	Melody 17

continued

MID EAST : WIND

Armenian Duduk Melody KS 1 C0-C2 (continued)	F1	Melody 18
	F#1	Melody 19
	G1	Melody 20
	G#1	Melody 21
	A1	Melody 22
	A#1	Melody 23
	B1	Melody 24
	C2	Melody 25
Armenian Duduk Melody KS 2 C0-B0	C0	Melody 26
	C#0	Melody 27
	D0	Melody 28
	D#0	Melody 29
	E0	Melody 30
	F0	Melody 31
	F#0	Melody 32
	G0	Melody 33
	G#0	Melody 34
	A0	Melody 35
	A#0	Melody 36
	B0	Melody 37
Armenian Duduk Live 1	Vel 1	Exp Vib
	Vel 2	Exp Short HT UP
Armenian Duduk Live 2	Vel 1	Exp WT UP
	Vel 2	Melody 1
Armenian Duduk Elements	Drone Exp Vib	
	Drone Non Vib	
	Drone Sus Soft	
	Drone Sus Vib	
	Exp Long HT UP	
	Exp Melody 1	
	Exp Melody 2	
	Exp Melody 3	

continued

MID EAST : WIND

Armenian Duduk Elements (continued)	Exp Short HT UP 1	
	Exp Short HT UP 2	
	Exp Vib Grace	
	Exp Vib SHT 1	
	Exp Vib SHT 2	
	Exp Vib SHT 3	
	Exp Vib	
	Exp WT UP	
	Non Vib 1	
	Non Vib 2	
	Sus Vib 1	
Bulgarian Duduk		**54**
Bulgarian Duduk KS C0-C#1	C0	Sus Vib Slow
	C#0	Sus Non Vib
	D0	Leg
	D#0	Sxp Vib Slow
	E0	Exp Vib Fast
	F0	Exp Vib
	F#0	Stac
	G0	Fast Bend UP
	G#0	Short HT UP
	A0	Exp Slow Trill
	A#0	Vib Bend UP 1
	B0	Vin Bend UP 2
	C1	Vib Bend UP 3
	C#1	Ornament
Bulgarian Duduk Live 1	Vel 1	Exp Vib Fast
	Vel 2	Exp Vib
Bulgarian Duduk Live 2	Vel 1	Exp Bend UP 2
	Vel 2	Exp Slow Trill

continued

MID EAST : WIND

Bulgarian Duduk Elements	Exp Slow Trill	
	Exp Vib Fast 2	
	Exp Vib Fast	
	Exp Vib SLW	
	Exp Vib	
	Fast Bend Up	
	Leg	
	Ornament	
	Short HT UP	
	Stac RR	
	Sus Non Vib	
	Sus Vib Slow	
	Vib Bend Up 1	
	Vib Bend Up 2	
	Vib Bend Up 3	
Ney Flute		**56**
Ney Flute KS C0-A0	C0	Sus Vib
	C#0	Exp Vib
	D0	Leg
	D#0	Non Vib
	E0	Sfz
	F0	Sus Vib Fall
	F#0	Grace 1
	G0	Grace 2
	G#0	Grace 3
	A0	Exp Melody
Ney Flute Live 1	Vel 1	Sus Vib
	Vel 2	Leg
Ney Flute Live 2	Vel 1	Sus Vib
	Vel 2	Grace 1

continued

MID EAST : WIND

Ney Flute Elements	Exp Melody	
	Exp Vib	
	Grace 1	
	Grace 2	
	Grace 3	
	Leg	
	Non Vib	
	Sfz	
	Sus Slur	
	Sus Vib Fall	
	Sus Vib	
Turkish Duduk		**54**
Turkish Duduk KS C0-D1	C0	Vib Bend UP
	C#0	Leg Exp 2
	D0	Exp Vib Slow
	D#0	Leg Exp 1
	E0	Bend UP Fast 3
	F0	Bend UP Fast 2
	F#0	Sus Bend DN
	G0	Slur DN
	G#0	Slur UP
	A0	Stac RR
	A#0	Exp Melody 1
	B0	Exp Melody 2
	C1	Exp Melody 3
	C#1	Bend UP Slow
	D1	Bend UP Fast 1
Turkish Duduk Live 1	Vel 1	Leg Exp
	Vel 2	Vib Bend
	Vel 3	Bend UP Fast
Turkish Duduk Live 2	Vel 1	Leg Exp
	Vel 2	Vib Bend
	Vel 3	Exp Melody 1

continued

MID EAST : WIND

Turkish Duduk Elements	Bend Up Fast 1	
	Bend Up Fast 2	
	Bend Up Fast 3	
	Bend Up Slow	
	Exp Melody 1	
	Exp Melody 2	
	Exp Melody 3	
	Exp Vib Slow	
	Leg Exp 1	
	Leg Exp 2	
	Slur DN	
	Slur Up	
	Stac 2RR	
	Stac 3RR	
	Sus Bend DN	
	Vib Bend UP	
Zourna		**58**
Zourna KS C0-A#0	C0	Sus Vib RR
	C#0	Non Vib
	D0	Exp
	D#0	Leg 1
	E0	Leg 2
	F0	Grace
	F#0	Trill
	G0	Exp Melody 1
	G#0	Exp Melody 2
	A0	Exp Melody 3
	A#0	Exp Melody 4
Zourna Live	Vel 1	Leg
	Vel 2	Sus Vib RR
	Vel 3	Trill

continued

MID EAST : WIND	
Zourna Elements	Exp Melody 1
	Exp Melody 2
	Exp Melody 3
	Exp Melody 4
	Exp
	Grace
	Leg 1
	Leg 2
	Non Vib
	Sus Vib RR
	Trill

Terms and Abbreviations Used in Articulation Names

TERMS & ABBREVIATIONS		
Abbreviation	Definition	Notes or Examples
5ths	Perfect 5th interval	A slide or chord sampled in perfect fifth intervals
Acc	Accent	Accent made by bow-biting a string or tongue-tightening on wind hole
Arp	Arpeggio	Broken ascending or descending chord played in sequential order
Basic	Basic articulation	Most commonly performed articulation of the instrument
Big	Big	Simulates a performance of more players than sampled
Bend	Bend of note	An adjustment of the fundamental note without pause
Body	Body-generated	A ceremonial shaker worn on the body in performance
Bow	Horsehair and wood	Stringed instrument performance with bow direction down or up
Bridge	Wooden object supporting the strings	Performed close to the bridge to give a more nasal or harsh timbre
Chrom	Chromatic	Pitched percussive performance; or, where pitches are stretched to accommodate twelve tones in an octave
Dbl	Double	Doubled articulation
DN	Down	A stringed instrument's bow or pick direction

continued

TERMS & ABBREVIATIONS

Abbreviation	Definition	Notes or Examples
Drn	Drone	A looped fundamental performed by a string or wind
Exp	Expressive	An exaggerated crescendo followed by a decrescendo
f	Forte	An Italian term used to describe a louder dynamic
Fall	Fall	An expressive drop in pitch at the end of phrase
Flutter	Flutter tongue	An expressive vibration created by a fast moving tongue
Fast	Fast	A shorter phrase
FX	Effects	Characteristic or uncharacteristic performance of the non-musical qualities of the instrument
Gliss	Glissando	An Italian term used to describe an ascending or descending musical phrase performed in a rapid and gliding manner
Grace	Grace note	Arrhythmic embellishment above or below the fundamental note
Groove	Looped Phrase	A looped musical phrase establishing a continuous pocket of rhythm
Harm	Harmonic	A frequency integral to the fundamental created by lightly touching a string or overblowing a wind instrument
Hi	Hi	Higher-pitched articulation
Hard	Hard	A more aggressive attack
HT	Half-Tone (Semitone)	The interval between 2 adjacent tones in the western twelve-tone scale
KS	Keyswitch	A switch between multiple articulations by the stroke of specific keys called keyswitch notes
Leg	Legato	Designed to create quick and smooth musical phrases
Live	Live	A velocity switching program which simulates more realistic and characteristic performances
Lng	Long	A longer phrase of any given articulation
Low	Low	Lower pitched articulation
Lyrical	Lyrical	A sweeter phrase
Med	Medium	A medium dynamic
mf	Mezzo Forte	An Italian term used to describe a moderately loud dynamic
Maj 3rd	Major 3rd	An articulation consisting of major 3rd intervals
Min 3rd	Minor 3rd	An articulation consisting of minor 3rd intervals

continued

TERMS & ABBREVIATIONS

Abbreviation	Definition	Notes or Examples
Mldy	Melody	A program consisting of melismas characteristic of the native musical qualities of the instrument
MOD	Modulation crossfade	Modulation crossfades between more than one articulation
mp	mezzo piano	An Italian term used to describe a moderately soft dynamic
Mute FX	Mute Effects	Effects that mute the string
Neck	Neck	An articulation where pick, finger or bow is positioned over the fretboard or neck of the instrument
NV/NVB/Non Vib	Non Vibrato	An articulation where the fundamental maintains consistent pitch for its duration
Oct	Octave	The fundamental stretches one octave higher or lower during the phrase
Open	Open	Most commonly performed articulation of an instrument
Ornament	Ornament	A small embellishment characteristic of the native musical qualities of the instrument
Ovrblwn	Overblown	The wind instrument is overblown to create an overtone or harmonic in place of the fundamental
p	Piano	An Italian term used to describe a softer dynamic
P 4th	Perfect 4th interval	A slide or chord sampled in perfect fourth Intervals
PK	Pick	Pick on string
RT/Resonance	Release Trail	Decay of the articulation in the sampled space
RR	Round Robin	The press of every key alternates between up and down, bow and pick, or left and right hand strokes
Scrape	Scrape	Pick is scraped across the string creating a harsh timbre
Sft	Soft	Soft articulation
Sfz	Sforzando	An Italian term used to describe a strongly accented note
Sht	Short	A short phrase
Sld	Slide	An uninterrupted transition in pitch from one fundamental to another
Slur	Slur	A smoother transition in pitch from one fundamental to another that the “slide” (above)

continued

TERMS & ABBREVIATIONS

Abbreviation	Definition	Notes or Examples
Slw	Slow	A longer phrase
Spic	Spiccato	An Italian term used to describe short articulations of the bow bouncing off the string
Spit	Spit	Short accents, course in timbre, created by saliva forced through a wind instrument
Stac	Staccato	An Italian term used to describe stiff and detached performance
Strum	Strum	Designed to simulate the characteristic attack of a pick strumming
Sus	Sustained	A sustained phrase
Trem/Trm	Tremolo	An Italian term used to describe rapid repetition of the fundamental
Trl/Trill	Trill	An Italian term used to describe the rapid repetition between the fundamental and a note above or below
Turn	Turn	A small embellishment
UP	Up	Describes the direction of the bow or pick
VB/VIB	Vibrato	An Italian term used to describe the perpetual but expressive wobbling in pitch of the fundamental
VS	Velocity Switch	A program which uses MIDI velocity to switch between multiple articulations
Western	Western Feel	A feel not necessarily characteristic of the native musical qualities of the instrument
Wide	Wide	Slower and wider vibrato
WT	Whole-Tone (Full Tone)	The interval representing one tone (two semitones) in the western twelve-tone scale

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