version 1.2.2 November, 2010
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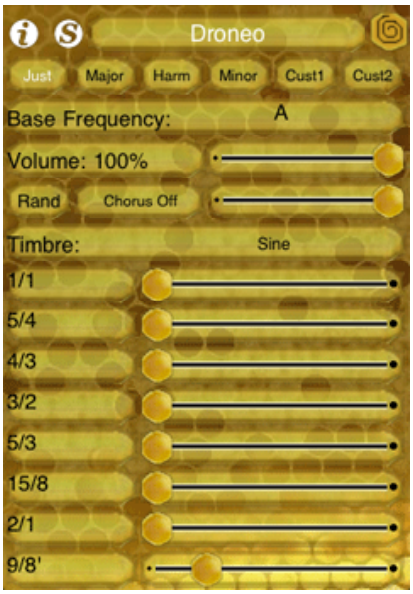
Use these links to show the instruction pages, or open all pages so you can print them.

Also: Check out my collection of Droneo Voices!

Introduction | Audio / Video | Main Screen | Tone Spiral | Notes

Tap the interface images below to get an explanation for the particular control, tap the image again to hide the explanation



Introduction

Droneo is a synthesizer which drones with various timbres and precise intonations that blur the distinction between tones, timbres and chords.

Droneo is also an excellent way to play with the way chords fuse into timbres — which is why there's such a heavy emphasis on interval specification. You can get a feel for how certain timbres fit "naturally" in certain frequency ranges, how tunings and timbres and chords intertwine.

Droneo can also be used as a pitch source for instrument tuning purposes, or as an aid for learning the difference between Just and Equal Tempered intervals.

This simulation uses 8 tone sources, (here called "*reeds*") which can be tuned to a number of intervals, randomly detuned, chorused, and modulated. The relative pitch and volume of each reed can be set individually, making for a wide variety of drones. The reeds can be set to various timbres suitable for drones, including vocal-like timbres and evolving, dynamically generated timbres.

The settings for all the reeds, timbres, modulations, volume levels and tunings (called a "*Droneo voice*") can easily be recalled. A set of six of these Droneo voices, called a "*voice bank*," can be named, saved, renamed, and deleted.

Droneo is a relative of one of my other iPhone Apps, SrutiBox.

To summarize, a Droneo voice is made of these parts:

- Each voice is made of up to 8 "reeds".
- Each reed is set to a certain interval based on a single frequency, the "base frequency". There are many ways to specify that interval and frequency.
- The intervals can be perturbed with a slight amount of randomization.
- Each reed can alternate ("churn") between two amplitudes and two timbres at a specified rate.
- Each voice can have a chorus effect put on it, at a specified rate.
- Some of the timbres change themselves while they are playing (Evolving timbres). Usually, this means a few harmonically related sines are added to the timbre. Some of the evolving timbres (Evolving mirrors) use the "other" churn timbre as sonic material instead of a sine wave timbre.
- A master volume control is used to scale the entire sound.

Experiment!

Here are some examples of **Droneo** in action:

VIDEO

Droneo (1.2) introduction video: a fast overview of Droneo 1.2 features

Droneo (1.2) preview tour of some Droneo timbres (even more are now available in 1.2)

Droneo (1.1) introduction video: a fast overview of Droneo 1.1 features

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AUDIO

Listen to how to build one kind of complex drone with Droneo! In this example, an evolving drone's base frequency is dropped a few times.

Hear an example of Droneo 1.2's Evolving Chant voices.
Read it Launch and load it

Interface:
Sliders
Tapping anywhere on a slider will immediately change its value to one corresponding to the slider's position. To set the minimum or maximum values of sliders quickly, you can tap the dots at the ends of the slider:

 for minimum,

 for maximum.

The info button is what was tapped to see these instructions!

The save icon takes you to a list of saved voice banks. Droneo comes with a few voice banks to start with:

Droneo, Blank,Voices, Evolving, Insects and Potpourri.

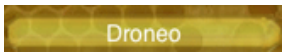
Their names are in blue, indicating that they cannot be changed, but you can load them and alter them, and then save them under new names. Droneo voice banks always save *the entire* set of Droneo voices, so if you have related Droneo voices, they can be saved together.

The voice banks first list the banks that come preinstalled, and then your saved banks, sorted alphabetically. The first bank is always the bank named " Last Voices" , which is the way Droneo was set when you last left it or if it was interrupted by a phone call.

When you choose a voice bank, the title area on the Main screen - which is actually a button - will change to be the name of that bank. Double tapping the title will reload a bank if you have changed it and want to revert to its saved version.
Double tapping helps cut down on accidental reloads!

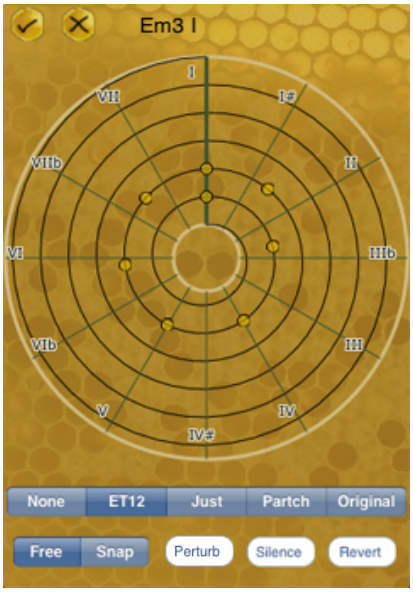
To pick a voice bank, tap the name in the list and it will instantly be put into effect.
You can save the Droneo voices currently in use as a voice bank by tapping the **Save** button.
If you have chosen a voice bank already and changed it, the **Save** button acts more like a "Save As" button.
Typing an existing saved voice bank name will overwrite that bank.

Pressing "edit" will let you either delete a voice bank by tapping the minus icon () or rename a voice bank by tapping the name itself.



The title area shows you which voice bank is loaded. This is a button which you can double tap to reload the patch named there (the double tap is a safety precaution!). When you start Droneo, it always loads the " Last Voices" voice bank, even though the title area says "Droneo". After five seconds, though, the title changes to " Last Voices" so you can click on it to reload them.

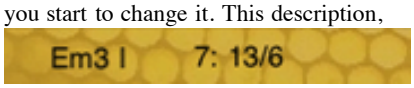
The Tone Spiral is a way to set up the intervals in a Droneo voice interactively. With a little planning, it can be an interesting instrument in itself!



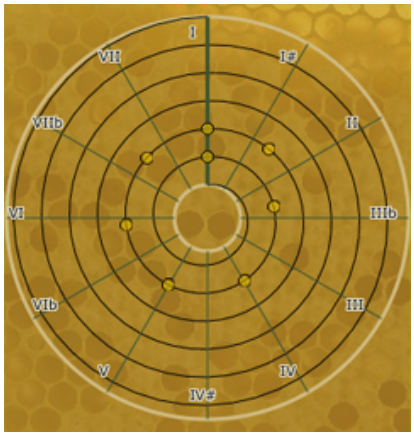
This set of intervals is accepted and made an official part of the Droneo voice. The labels of each reed are changed to express the interval as cents. You can go inand customize them after they have been changed. Note that this wipes out previous settings for the intervals, so if you want them back, you should reload the whole Droneo voice bank that the voice is associated with. The interface reverts to the Main screen.

This of intervals is not accepted and reverts to the settings before the Tone Spiral screen was displayed. The interface reverts to the Main screen.

This title area reminds you of the Droneo voice name. On the right, though, you will see a description of the reed interval you are changing when you start to change it. This description,

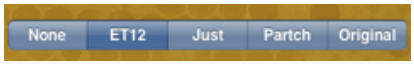


shows the reed number (1 to 8) followed by the interval in cents or, if you "snapping" the interval, the interval name as shown in the interface.



This large spiral is an interface for displaying and showing intervals for all of your reeds.

- Each reed is represented by a small circle: ○. The circle is placed on a black spiral which represents interval values ranging from 1/2 (-1200 cents) to 32/1 (6000 cents). Intervals outside this range are clamped to the top or bottom permissable intervals. Each loop of the spiral represents another octave, and intervals are placed logarithmically on that spiral.
- If the reed has no interval, it's put near the center of the spiral, out of range.
- The center of these circles is slightly transparent, so if more than one reed shares the same interval, the yellow color of the circle with be more intense.
- You can set the interval you'd like for that reed by dragging it to as spot on the spiral.
- You can show various interval guides for intervals, which can help you see where to place the interval in relation to existing intervals.
- Two modes, "snap" or "free", control whether the intervals you choose are constrained to the interval guides or not.
- If you are in snap mode, your changes are constrained to intervals and octaves of intervals of the current interval guide. The button next to the "snap" button becomes the Retune button, which when tapped will move all intervals to the closest one in the current guide.
- If you are in Free mode, your changes are not constrained. The button next to the "free" button, becomes to the Perturb button, will add or subtract a small random amount from all the intervals.
- The Silence button turns all the intervals off.
- The Revert button resets all the intervals to what they were when you called up the tone spiral.



These are interval guides that help you to see and specify intervals using the tone spiral.

- **None**: removes all guides.
- **ET12**: shows the familiar 12 tone equal temperament scale lines. Yes, they are equally spaced!
- **Just**: shows a nice selection of just intervals.
- **Partch**: shows the famed 43-tone just scale of Harry Partch's fixed tone instruments.
- **Original**: shows the scale as specified when you called up the tone spiral. The labels are set to the same labels as they are on the Main screen.

The interval guides interact with the Snap mode to constrain your interval choices.

- If you are in snap mode, your changes are constrained to intervals and octaves of intervals of the current interval guide. The button next to the "snap" button becomes the Retune button, which when tapped will move all intervals to the closest one in the current guide.
- If you are in Free mode, your changes are not constrained. The button next to the "free" button, becomes to the Perturb button, will add or subtract a small random amount from all the intervals.

Note that if you are using the "Original" interval guide, and your original ratios were all "off", and you have "snap" on, it won't let you set anything!.

- If you are in snap mode, the 

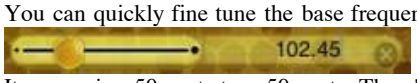
button will move all intervals to the closest one in the current guide.
- If you are in free mode, the 

button will add or subtract a small random amount from all the intervals.

The silence button turns all the intervals off.

The revert button resets all the intervals to what they were when you called up the tone spiral.

All the reeds use this **base frequency** to tune their intervals relative to that frequency.
The base frequency can be set to values between 0.00 Hz and 2756.25 Hz .
You can change the base frequency to a new Hz value by tapping it and typing it in .
You can also type in a standard note name and it will take that as a base frequency. To specify sharps, you can use '#' or 's', and to specify flats, you can use 'b' or 'f', for example: bb (B flat), c# (C sharp), Df (D flat), Fs (F sharp).
These "named note frequencies" are set in a low octave (based on A3 = 220.0 Hz) by default, so the higher harmonics can be used.
For other octaves (0 through 4), you can type the octave as part of the name, for example, Bb2, C4, Ds1, fs0. Having no octave specified is the same as using octave 3 (E alone is E3).

You can quickly fine tune the base frequency using the base frequency slider that pops up when you tap the setting:


Its range is - 50 cents to + 50 cents. There's a little dead zone in the middle to help you get back to the original setting.

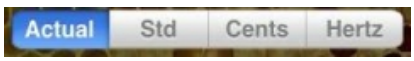
Low frequency sounds may be hard to hear through the built-in speaker (if you have one); try using higher frequencies, larger intervals in the interval sets, or richer timbres!
One more feature of the Base Frequency is the ability to use existing frequencies rather than setting it directly. Here's how it works:

- Every time you specify a frequency explicitly, with a name or Hertz value, it's also stored in a constant called the Kept Frequency, or "K". It's like the memory in a simple calculator.
- You can refer to K as the base frequency instead of a specific one as a Droneo Voice base frequency. For example, if you set one voice to run at G2, a voice set to "K" which is chosen right after it will also run at G2. This will be displayed as "K [effective frequency], e.g. `K 196.00`
- If you move the slider to fine tune it, it stops being relative and becomes an explicit tuning.
- You can also transpose the kept frequency up or down by octaves by saying "K+n" or "K-n" where n is 0 to 9 octaves. Thus, you can have some very high or very low intervals and transform them near each other for the proper timbral effect.
- When using a "Kept Frequency", it's displayed as "K+octave [effective frequency]" as its name, e.g. `K+2 440` or `K-4 13.75`
- Kept base frequencies are saved in Droneo Voices just like any other base frequency.

The **Volume** slider sets the master volume for Droneo's synthesizer.
You can also use the buttons on the side of the device, but they don't work if you are docking it and using the mini phone jack on the dock.
There's an useful, if obscure, side effect of setting the volume to 0 : it also resets the phases of all the reeds to 0. This is normally not a concern, but if you are doing a trick with an ultra-low base frequency and some insect timbres, this will get them all to start at the same time.

These are a series of buttons that choose pre-set **Droneo voices**. This comprises the settings for base frequency, volume, randomness, churn, chorus, timbres, reed volumes and intervals.
Here is a description of the banks of Droneo voices that come pre-installed:
You can chose a Droneo voice by clicking on its name.

By **triple clicking** on a Droneo voice name, you can rename it, describe it, specify how the intervals are displayed in the interface, and also export and import the Droneo Voice!. Triple click is used to avoid accidents!



The four interval display choices are;

- **Actual**: the interval as it is actually described, that is, as a ratio, cents value or equal temperament setting, possibly showing a more meaningful label of that internal specification. Example:

1/1 Root will show as "Root"

- **Std**: the reed frequency as interpreted as a standard 12ET western name, with a possible cents offset.
  Example:
  With base frequency of "C", **3/2** will be displayed as "G3 +1.96 ¢". If the octave is below "0", it displays "<", and if the octave is above "9", it displays ">".
- **Cents**: the reed interval in cents,
  Example:
  7:13 (The seventh degree of 13-equal temperament) will be displayed as "646.15 ¢"
- **Hertz**: the reed frequency in Hertz.
  Example:
  With base frequency of "C", **1/1 Root** will be displayed as "261.63 Hz"

Import and Export

Export will put a human-legible specification of this Droneo Voice on the clipboard. From there it can be emailed out, pasted in Notes, blogged, otherwise shared, or modified with an editor. You may also want to generate voices programatically.

Import, similarly, imports one of these exported Droneo voices. The import, if successful, takes effect immediately when you load it, and you can revert to the old patch by touching "cancel" or keep it by touching "save".
Furthermore, Droneo responds to the "droneo://" web scheme, so you can keep a set of Droneo voices on a website, point to them as <a href="droneo://path-to-patch"> and Droneo will launch and load with that Droneo Voice. Check this out at http://www.jhhl.net/iPhone/Droneo/Voices/.

The format is pretty easy to understand, but is also unforgiving in terms of using spaces and the order of the parameters. They must all appear in the order shown here, with no omissions, and the "name" and "desc" fields should not be left blank. Imports that Droneo can't read will be noted in a popup. The reed names are in angle brackets because they can be pretty complicated strings with spaces in them. Don't forget that the base frequency is a string also! Any of the base frequency name variants should work. The Export files are in UTF-8 format. Importing is case sensitive, except in the case of "timbre1" and "timbre2" names, which accept non-superscript version of the Sine timbres, for example:
`Sine11` is accepted as `Sine`^{11}.
The reason it says "droneoahet" at the top is so you can use a search engine to find Droneo voices easily with a search on the Web!

The format of an exported voice looks like this:

```
Droneo FV1.1 droneoahet;
version: 1103;
name: Just;
desc: Droneo: Just Major Scale;
created: 2010-06-01 01:51:12 PM;
baseFreq: D2;
volume: 0.999;
timbre1: Harmonium 2;
timbre2: Harmonium 1;
chorusFreq: off;
churnFreq: 22.03876;
isRandom: NO;
nameStyle: Actual;
modulationState: Churn;
reed0: <1/1>,0.5598791,0.5598791;
reed1: <5/4>,0.5598791,0.5598791;
reed2: <4/3>,0.5598791,0.5598791;
reed3: <3/2>,0.5598791,0.5598791;
reed4: <5/3>,0.5598791,0.5598791;
reed5: <15/8>,0.5598791,0.5598791;
reed6: <2/1>,0.5598791,0.5598791;
reed7: <18/8 9/8'>,0.5598791,0.5598791;
```

This format takes the place of the deprecated format V1.0. With this new format, the semicolons delimit the settings, so it can be wrapped and still correctly interpreted. The order of settings is not important, and you can leave some out if you intend to make them by hand, the missing settings being provided with benign defaults. Settings are truncated to their normal limits. You can comment out a line by putting a # in front of it.

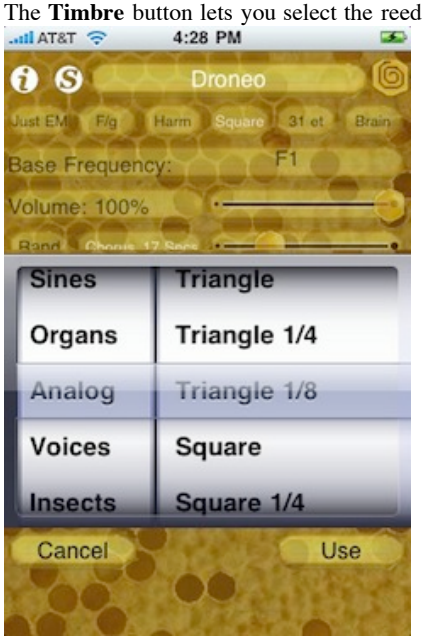
The **Rand** button, adds a random amount of detuning to each reed. This can be used on any Drone voice. This detuning is in the range of an "eighth tone" (25 cents) sharp or flat from the original interval. This is reflected in the interval's label as, for example "+12¢". Repeatedly tapping the Drone voice's button will make new detunings from that voice. Tap the Rand button again to turn off this feature.
When saving a Droneo voice that has the random feature on, the fact of "randomness" is saved, but not the actual random interval offsets.

Modulations
The **modulation slider** controls the speed of sound modulation changes. These can add a lot of life to the sound of the drone. By tapping the name of the modulation (Chorus or Churn), it chooses the type of modulation you wish to set.

Chorus is a modulator that slowly detunes the left and right channels from each other (they are also slightly mixed) to provide some "motion" in the sound. The speed of the chorus runs from 1 to nearly 60 seconds.
Setting the modulation slider to its maximum value will turn the chorus off. To use the slowest speed, nudge it a bit to the left from the maximum value. Reeds set with a rich timbre or in a complex chord will reveal more "motion".

Churn: When you move the modulation slider in "Churn" mode to the left, the churn feature is turned on and a new timbre setting and a second set of eight volume sliders appears.
Churn is a modulator that slowly interpolates the timbres and settings of volume sliders to the other set and back again. The speed of the churn runs from 1 to nearly 60 seconds.
Setting the modulation slider to its maximum value will turn the churn off. To use the slowest speed, nudge it a bit to the left from the maximum value. When it's turned off, only the left set of sliders is used as the volume sliders.
A triple touch on the volume sliders works the same on the two columns of sliders: they all will follow the slider you move. A double touch on a volume slider will let you set both left and right volume sliders simultaneously for a particular interval.

The **Timbre** button lets you select the reed timbres. Tapping the timbre's name brings up the timbre picker:



The left side is a category index to make finding a timbre easier. This will be more important as I add timbres in the future!
As you scroll through the timbres, the timbre playing will immediately adjust to the currently selected timbre. You can continue to use it by tapping "Use" or go back to the previous one with "Cancel".
There are a number of timbres to choose from, each with differing qualities.

Sines: these wave forms are made by raising a sine to successive odd powers, each time adding more harmonics.

- Sine - a simple sine wave, no harmonics at all.
- $Sine^3$ - you can hear a fifth
- $Sine^5$ - you can hear a third
- $Sine^7$ - you can hear a seventh.
- $Sine^9$ - you can hear a ninth.
- $Sine^{11}$ - you can hear an eleventh.

Organs: have a few higher harmonics, like an old electronic organ with a few draw bars pulled out.

- Organ 1, harmonics 1, 2
- Organ 2, harmonics 1, 2, 3, 4, 5
- Organ 3, harmonics 1, 2, 3, 4, 5, 6, 7, 8
- Harmonium 1, taken from the spectrum of a harmonium reed.
- Harmonium 2, also taken from the spectrum of a harmonium reed. Good with low pitches!
- Buzzy Organ, very buzzy. Odd with some light even harmonics. Very much like a sawtooth wave.

Analog: these are similar to waveforms found in analog synthesizers.

- Triangle
- Triangle 1/4 has a duty cycle that puts the peak of the triangle at 1/4 of the whole wave.
- Triangle 1/8 has a duty cycle that puts the peak of the triangle at 1/8 of the whole wave.
- Square
- Square 1/4 has a duty cycle that puts the transition of the square at 1/4 of the whole wave.
- Square 1/8 has a duty cycle that puts the transition of the square at 1/8 of the whole wave.

Vocals: these are constructed by summing harmonics, which are scaled to the harmonic shape (formants) of the intended vowel, based on the pitches of the reeds. As a side effect, each of the waveforms used by the reeds differs, so each reed may sound quite different in a related way.
It calculates these waves when you choose them, which is why there may be a little pause before playing them.

- A Voices ("k*a*rma")
- U Voices ("t*u*ning"
- O Voices ("dr*o*ne")
- E Voices ("b*e*st")
- I Voices ("b*ee*s")

Voices benefit from low base frequencies - near that of real human voices - and a little randomness.

Insects: Designed for very low frequencies, they are a short, enveloped "chirp" followed by silence. Setting the base frequency to 1 Hz is a good start for experimenting with these, and I often go a lot lower. At higher frequencies, they distort quite badly, which you may also like!
There's an useful, if obscure, side effect of setting the volume to 0 : it also resets the phases of all the reeds to 0. This is normally not a concern, but if you are doing a trick with an ultra-low base frequency and some insect timbres, this will get them all to start at the same time.

- Insect 1
- Insect 2 is an octave higher than Insect 1
- Insect 3 is an octave higher than Insect 2
- Insect 4 is an octave higher than Insect 3

Evolving timbres: These timbres all blend randomly chosen harmonics into the existing waveform for each reed. Each timbre has different criteria for how many harmonics they add, how often they change, and how rapidly they blend into the existing voices. Because of this, they also smoothly (for the most part) blend into what's already playing!
The new harmonics are often scaled in volume so the resulting timbre is not so high in high frequencies.
Each reed has its own separately evolving voice - so they blend in and out with each other.
I'm trying to minimize artifacts, but some still remain! These timbres are a little computationally intense, so they may be less "clicky" sounding if unused reeds have their volumes set to 0 or have frequencies set to "off".
In general, that's a good idea!

- Evolving 1: merely fades a sine wave timbre in and out randomly (but slowly).
- Evolving 2: randomly adds none, 1,2 or 3rd harmonics.
- Evolving 3: randomly adds up to the 8th harmonic.
- Evolving 4: randomly adds up to the 12th harmonic, more slowly.
- Evolving 5: randomly adds up to the 16th harmonic, more slowly.
- Evolving 6: randomly adds up to the 16th harmonic, more quickly.

Using the evolving timbres with chorus, churning and carefully (or carelessly) designed interval sets makes for a richly evolving palette of droning!

Evolving Mirrors: like the evolving timbres, they change with time, but take their timbre waveforms from the "other" churn voice instead of a sine wave!
The right side timbre can be hidden (that is, Churn can be turned off) and still be used as harmonic material by the left side.
You can make both voices mirror each other, but after a while, the sound fades out, so it's not much fun.

- Evolving Mirror 1: fades the opposing timbre in and out randomly (but slowly).
- Evolving Mirror 2: uses the opposing timbre to build random harmonics, up to the 12th harmonic.

- Evolving Mirror 3: uses the opposing timbre to build random harmonics, up to the 10th harmonic, but the harmonics are not scaled so there is more definition in the individual tones.
- Evolving Mirror 4: uses the opposing timbre to build random harmonics, up to the 8th harmonic, slowly choosing a new harmonic, but adding it quickly.
- Evolving Mirror 5: uses the opposing timbre to build random harmonics, up to the12th harmonic, very slowly choosing a new harmonic, and slowly adding it.
- Evolving Mirror 2: uses the opposing timbre to build random harmonics, from the 6th to the 12th harmonic. So set the base frequency low!

These voices recalculate at a control rate that sometimes is audible as a slight ticking, mostly with purer drones.

Evolving Chants: These are like the Evolving voices, but they randomly choose a vocal timbre as part of their "evolution". They never add higher harmonics, just silence or one of the vocal timbres.

They don't work well with Evolving Mirrors though.

- Evolving Chant 1: Quickly changing chanting
- Evolving Chant 2: Slowly changing chanting

These voices are computationally expensive, so may cause the phone to warm up! They also recalculate at a control rate that sometimes is audible as a slight ticking, mostly with purer drones.

Consorts: Consorts are small ensembles of different timbres, associated with specific reeds.

Name	1	2	3	4	5	6	7	8
Sine Consort	Sine	Sine	$Sine^3$	$Sine^3$	$Sine^5$	$Sine^7$	$Sine^9$	$Sine^{11}$
Organ Consort	Organ 1	Organ 1	Organ 2	Organ 2	Organ 3	Harmonium 1	Harmonium 2	Buzzy
Analog Consort	Sine	Sine	Triangle	Triangle 1/4	Triangle 1/8	Square	Square 1/4	Square 1/8
Vocal Consort	A	A	U	U	O	O	E	I
Insect Consort	Insect 1	Insect 1	Insect 2	Insect 2	Insect 3	Insect 3	Insect 4	Insect 4
Organ & Vocal	Organ 1	Organ 2	Harmonium 1	Voice A	Voice U	Voice O	Voice E	Voice I
Analog & Insect	Sine	Sine 3	Triangle	Square	Insect 1	Insect 2	Insect 3	Insect 4

Each reed's **volume** can be individually set, to create a precise mix of intervals and harmonics. Here is where you can have a lot of fun exploring chord voicings and harmonic textures. You don't have to slide these (or any Droneo) sliders, just tap them where you want them to be set. The lowest and highest values have special icons to help you out. If you want to set all the volumes to the same value quickly, triple tap a slider which is set to that value. Since this also works for the "zero" level, it's a fast way to zero out the sound.

Just intonation interval sets, such as "Harm" and "Just" found in the "Droneo" voice bank, are well suited to making chords which fuse into timbres. There are a great many philosophies about which intervals should be used to derive scales, and how to use them to build harmonies, dissonances, melodies, and timbres, and I've only chosen to include some in the Droneo voice banks to get a taste of the possibilities of microtonal scales and intervals in this context of drone accompaniment.
To this end, all the Droneo voices' interval sets are customizable — Droneo lets you replace and rename all intervals in the Droneo Voices.
By tapping in the interval name area, you can specify the interval you wish by either:

- typing in a ratio (e.g 3/2, 21/20, 81/256),
- typing in a number indicating the number of "cents" (e.g. 110, 133.33, 701.9), or
- typing in a degree of an equally divided octave (e.g. 5:19 is the 5th note of 19 tone equal temperament). These are numbered from 0!

You can get pretty creative here - since these numbers can even be "real" numbers, you can even make a "ratio" like 1.01/1 or "quarter-tones" in an equal temperament like 7.5:31.
I don't let any of these intervals resolve to a ratio larger than 256/1, that is, 256 times the base frequency. You can set it to really low ratios though, and choose a higher base frequency to get about the same effect.
A Ratio will calculate a frequency that is the base frequency times that ratio, for example, with a base frequency of 110 Hz, 3/2 will become 165 Hz, 15/8 would be 206.25, etc. Cents are somewhat more complicated, but every hundred cents represents a 12 tone equally tempered halftone: 100 would be a standard minor second, 400 a major third, 750 a quarter tone higher than a perfect fifth.
There are a lot of references you can find that translate historical, ethnic and experimental scale intervals into cents.
The formula, for those with a calculator, is

```
frequency =
base_frequency * 2 (cents/1200).
```

For the arbitrary equally tempered octave notation (**a:b**), the formula is a similar: `frequency = base_frequency * 2 (degree/division)`
For more information on scale construction and historical intonations, you can get pretty deep into it if you pick up a copy of Scala by Manuel Op de Coul.

You can give an interval a descriptive label by typing that label after the numeric specification of the interval, separated by a space. e.g.

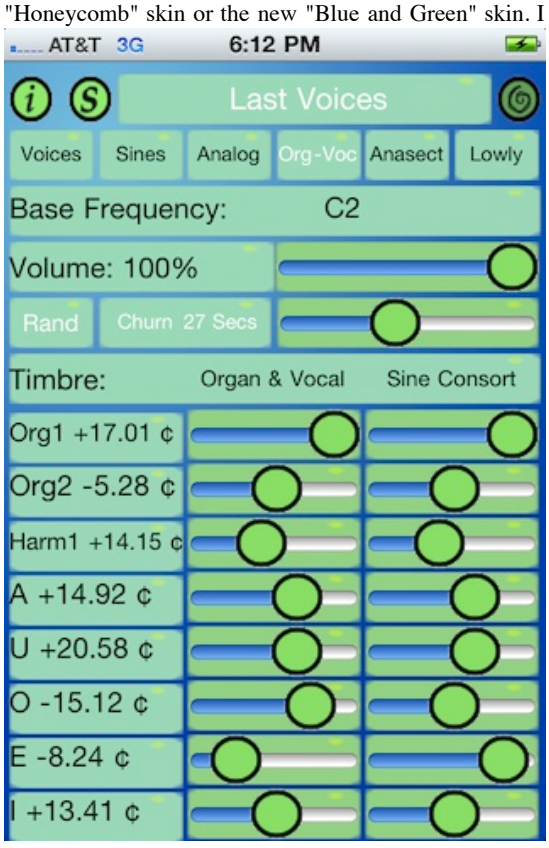
```
3/2 Just perfect fifth.

81/80 syntonic comma.
```

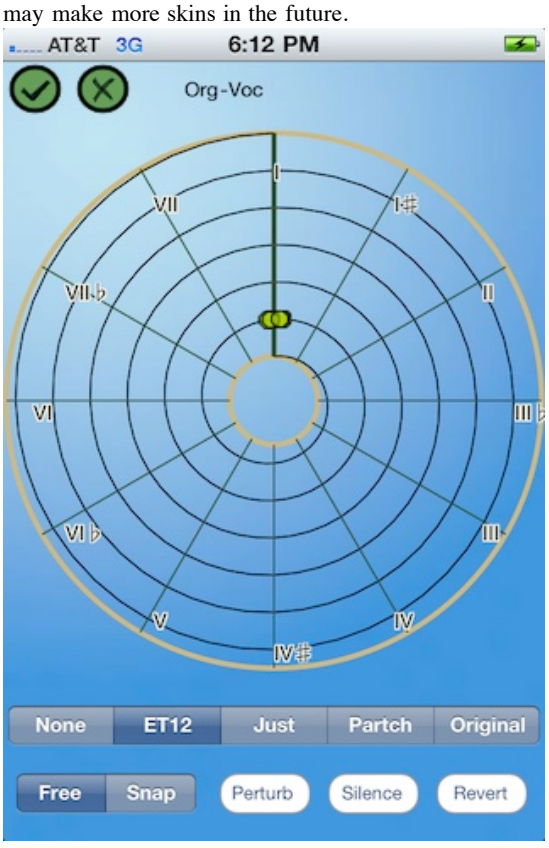
Don't make the labels too long (more than 16 characters) or they will be truncated.
You can keep the reed from sounding at all by typing "off" or "zero" or "?" as the interval setting. This different from setting it to "0", which means an interval of 0 cents (that is, the base frequency itself).
You can then set the interval value by tapping save (which you hear immediately if the volume for that reed is up), and also you can both save and pick a new interval value to set by tapping the interval name of the next reed you want to work with.
You can see these intervals expressed in different ways by triple clicking the Drone voice's name and using the segmented selector to change how the interval values are displayed. The internal setting is still what you typed in originally, though.
See: this section of the instructions.

Notes and Tips

Thank You!
Henry Lowengard

As of 1.2.2, Droneo can play in the background under iOS4.x! This has a side effect tht to shut it off, you have to press the home button (as if you were shutting it off the usual way), then double click the home button to reveal the "quick launch" menu, then touch the Droneo icon and hold it until it wiggles, then tap the circled "x" in the icons corner. I hope Apple makes this easier some time!
Droneo can change its "skin." If you use the Settings App, it's listed among the other applications. There you get a choice of the original "Honeycomb" skin or the new "Blue and Green" skin. I may make more skins in the future.





Please rate or write a review for Droneo!
You can get all social network-y with each other over at the jhhl iPhone Apps Facebook Page

You can load Droneo voices from a somewhere on the net! Check out my collection of Droneo Voices!

- As with other iPhone audio applications, if you are connecting the device to an amplifier, you may want to disable the phone function so you don't hear the occasional noise resulting from GSM synchronization. Putting it in "Airplane Mode" will help a lot with that and battery usage! Similarly, shut off Bluetooth, push mail, location services, or anything else that might cause the phone to decide to do some non-droning work. This will make it more like an instrument. If the phone is enabled, incoming calls will will cause Droneo to save its settings in

a voice bank, fade out and let you have have a conversation. After the call, Droneo will relaunch using that saved voice bank. Sometimes I find the audio doesn't come back. In that case, stop and restart Droneo.

- Headphones or earbuds are recommended for a good stereo effect.
- Make sure the volume is not too high - your ears - and the iPhone's earbuds and speakers - are delicate!
- I sometimes find the phone tends to heat up during Droneo's operation. Shut off Droneo if this becomes uncomfortable. I also suspect it's not too good for battery life.

Drone picture from http://tvtropes.org/
The formant data for the vocal timbres is taken from CSound.

Use these links to show the instruction pages.

Introduction | Audio / Video | Main Screen | Tone Spiral | Notes

open all pages so you can print them.