XiiixxiQ

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XiiixxiQ
version 0.1.3
DECEMBER 2023

Euclidean, Non Linear, Poly-metric, Polyrhythmic, Morph-able Step Sequencer

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XiiixxiQ

XiiixxiQ is designed to be a MidiFX plugin in Logic.

It should be installed in the Components Folder on your Mac: [Macintosh HD / Library / Audio / Plug-Ins / Components]. There is a drag and drop folder as part of the installation package for this purpose.

When running on your system for the first time XiiixxiQ will create a folder in the [Macintosh HD / Users / Shared] directory called XiiixxiQ containing 4 empty folders (Pattern_Match, Presets, Roundel, and Subset_Sequencer) ready to store your user files should you wish to save them.

XiiixxiQ offers a unique collection of sequencing processes based around the central theme of summing Euclidean rhythms. The output of up to four discrete Euclidean generators are summed before feeding into a single step sequencer. This unique arrangement in itself offers a huge number of evolving rhythms when driving a single sequence but this is only the starting point as further manipulations can occur using one of the options below.

Sequence Morphing

There are two Sequence-Morph options; a 2-Dimensional A/B option which blends two totally different set-ups together as you move from one to the other, and a 3-Dimensional A/B/C option which can triangulate settings between three independent set-ups.

Subset Sequencing

The inter-relatedness of the individually generated Euclidean rhythms, through a process of common subset analysis, can be exploited to build a sequence of patterns that move from one set of common subset relationships to another. Subset sequencing only affects ONE generator – Sequencer I, labelled Primary Rhythm on the Subsets page. This provides adequate variation - even if only one other generator is being added. To include more generators within this process would become incredibly unwieldy very quickly – although this is, of course, something I will look at at a later stage.

Pattern Matching

There is additionally the option to input a custom rhythm which can either be fed into the step-sequencer with no input from the Euclidean generators, or as a contributory element. This custom rhythm can also be analysed and re-created as closely as possible by using the Euclidean generators alone.

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[STEP SEQUENCER]
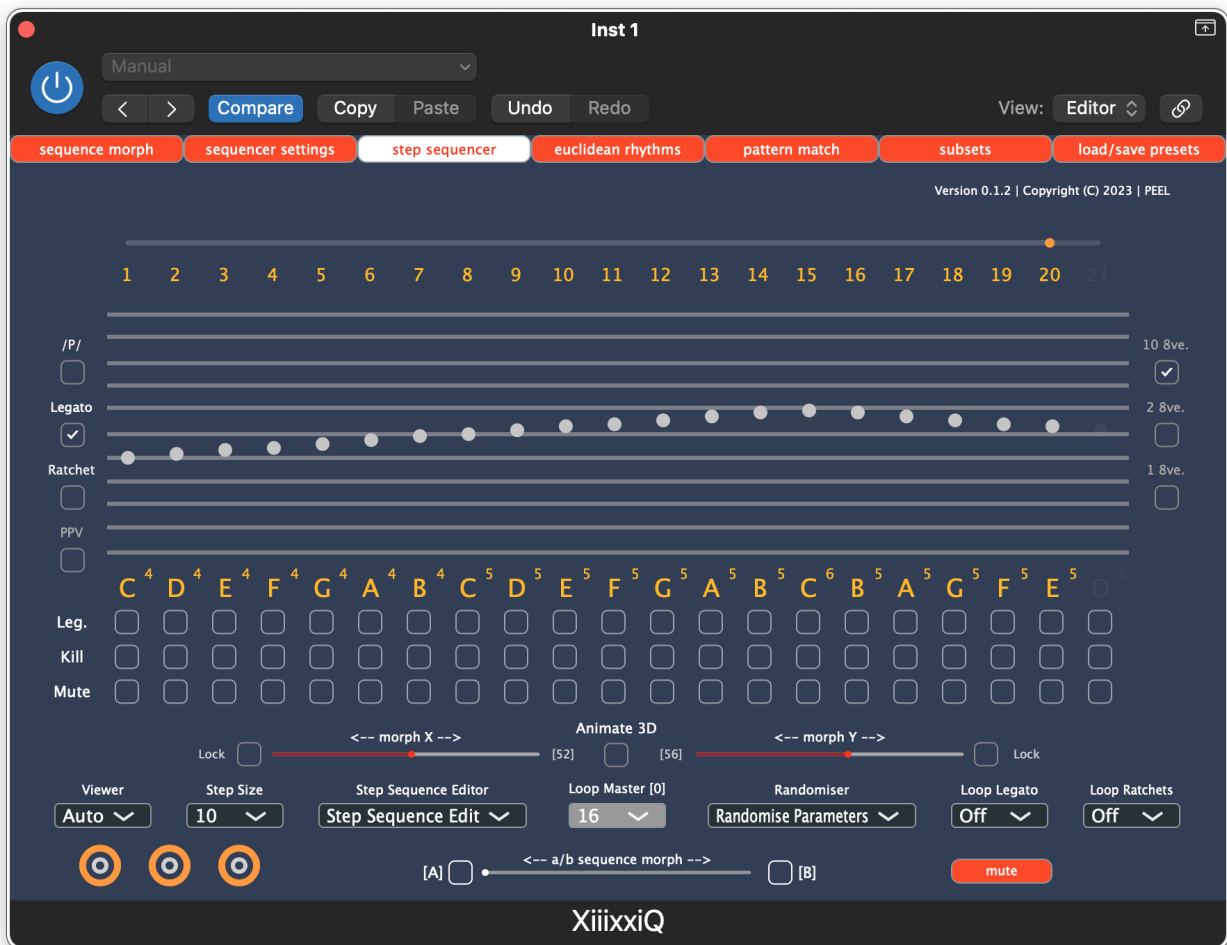
The pitch-sequencer is a standard, single track, monophonic, 21 step pitch-sequencer. Each step is capable of covering the full 10 octave range; C0 to G10. The sequence is driven exclusively by the output of the summed Euclidean rhythm generators.

Each track is identical with sliders acting to move the individual pitches up and down to their desired level. There are three available views of the sliders; 10 octave (full range: 0 – 127), two octaves, or just one octave. The setting is changed using the 3 buttons to the left of the sliders [*10 8ve*], [*2 8ve*] and [*1 8ve*]. The particular octave(s) being viewed can be chosen using the dropdown **8ve Range** which will appear following selection of one of the smaller ranges.

When in the default 10-octave range view, the pitches can also be edited by left clicking and dragging the mouse over the sliders. The initial click must be outside of the pitch-sequencers area – next to, but not on, one of the buttons to the left or right would be ideal.

The slider at the top shows the length of the sequence in steps and can be dragged to set to the desired sequence length (1 – 21 steps).

The pitches shown at the bottom of the sliders are those that are set in the sequencer's sliders prior to any further editing in the [*Sequencer Settings*] page. To see the actual pitches being generated *following* editing by the settings page you can enable the [*PPV*] button.

Individual sequence steps can be both MUTED *and* KILLED (removed from the sequence entirely).

Individual sequence steps can have LEGATO attached to them (the selected note is held on until the next pitch sounds) or they can have RATCHETS attached (the ratchets are inserted between the selected note and the one following).

Both the Legato steps and the Ratchet steps can be individually looped, independently of the pitch sequencer's timeline. Legato and ratchets are mutually exclusive for any one step with legato taking precedence. The speed of the ratchet is set using the ratchet dropdown which will appear once the ratchet loop option is set. To loop in synch with the sequencer (effectively *not* looping but just playing as set) select the sequence length as the loop length. This will enable the ratchet speed option to appear.

In the main 10-octave range view the [*/P/*] (for parallel) button can be selected to allow for selectable steps to be moved *in unison* to the same pitch.

All of these setting are morph-able and can also be accessed via automation.

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[SEQUENCER SETTINGS]

This page features the controls for the processing of the pitches set by the step-sequencer's sliders before being broadcast.

Steps [V] – **Velocity Steps** sequence length: see Velocity-Sequencer below

Steps [P] - **Pitch-Sequencer Steps** controls the pitch-sequence length (1 – 21 steps).

Path - **Pitch-Sequencer Path** allows you to select how the sequence is played; forwards, backwards, ping-pong style (with or without a repetition of the initial and final step), plus a couple of skipping options that can generate recognisably classical (and *classic)* sequencer movement, and a random step generator.

Range - **Pitch-Sequencer Range** affects the range of the notes produced; at 100% this is 'as is' – the pitches remain unaffected. If the range is reduced towards 0 the notes are compressed together to eventually produce a range of zero – that is, they cluster around a single tone. Going the other way towards 200% the intervals between the pitches increase around a central point (see below) until they then move twice as far as they did to get to the next pitch.

For example: A chromatic scale at 100% would become a whole-tone scale at 200%, and the interval of a tritone would become an octave.

The [*Pitch Invert*] button inverts the melodic movement around a central point so that a leap or step in an upwards direction is transformed into a leap or step (of similar size) in a downwards direction and vice-versa.

C&I Pivot - The **Compress & Invert Pivot** selects the note around which inversion will take place, which is also the same note towards which the **Pitch Sequencer Range** will squash the notes, and away from which it will expand the range. Because these two settings are focused around the same point, using the **Pitch-Sequence Range** and [*Pitch Invert*] functions together can produce some very closely related and potentially tightly controlled musical transformations.

Humanise – The **Humanise** function adds a natural variation to both the timing and velocity of the notes played.

Swing – The **Swing** function adds swing (0% to 34%) to the rhythmic output of the generators.

Gate – **Gate Length** controls how long the triggering MIDI pulse lasts thus potentially affecting the attack portion of the envelope of the sound-generating plugin that XiiixxiQ feeds into.

All of these setting are morph-able and can also be accessed via automation.

Velocity-Sequencer

The steps of the Velocity-Sequencer are triggered by movement of the pitch sequencer via the Euclidean rhythm generators. It only moves to the next step when a pitch or rhythm is triggered – and not automatically by the basic pulse. This means it can cut across the underlying pules to easily produce poly-metric patterns.'.

Comp - The **Compress** feature can be used to compress the range of the velocities set by the individual sliders.

Master – The **Master Volume** setting controls the overall output of the velocity sequencer (0 – 127).

Individual steps can be muted using the [*Mute*] step option.

All of these setting are morph-able and can also be accessed via automation.

Quantiser

The [*Quantiser*] is, by design, the last step in the pitch processing chain. It acts to affect the output of all the previous processes by keeping them within the user-defined scale thus adding an effective control over the entire output. It can be turned *On* and *Off* using the button.

The quantiser is NOT morph-able but can be controlled via automation if so desired.

Step Sequence Editor

This drop down offers some additional features to edit the current pitch sequencer.

The entire sequence can be moved up to 4 steps forwards { *<-[+X]* }, or 4 steps backwards { *->[-X]* }.

The sequencer settings can be quickly reset using { *Reset Controls* }, as can the Euclidean generators; { *Reset E.Rhythms* }.

All pitches can be { *Set To C60* } – perhaps as a quick start to trigger a kit or sampler.

You can use the { *Set As Basic Sequencer* } option to reset XiiixxiQ to be a basic step sequencer with a pulse set to 1/8th notes using just one Euclidean Sequencer. This will also reset all the sequencer settings.

Step Size

The size of the step taken by the pitch sequencer between notes can be adjusted here. This can add some interesting development and variation to a sequence.

Loop Legato

The *Legato* selection can act as a standalone pattern and be looped independently producing yet another cross-rhythmical element to a sequence using the **Loop Legato** dropdown to set its length.

Loop Ratchets

Similarly, the *Ratchet* selection can act as a standalone pattern and also be looped independently using its own **Loop Ratchets** dropdown. The speed of the ratchet can be edited via a secondary **Ratchets** dropdown which appears when the **Loop Ratchet** dropdown is set to anything but { *Off* }. Turning it off once the ratchet length is set will not affect the choice made in the **Ratchets** length dropdown. To turn a ratchet off completely – deselect it in the pitch sequencer using the appropriate button below the affected pitch. The use of *Ratchets* and *Legato* are mutually-exclusive.

All of these setting are morph-able and can also be accessed via automation.

Loop Master

The **Loop Master** setting is GLOBAL and controls the number of steps (currently hardwired to be 16ths) or, effectively, length of the time, until the entire sequence repeats. This applies to both the *PITCH* sequence (including the Velocity sequencer, Legato Loops, and Ratchet Loops), and the *EUCLIDEAN RHYTHM GENERATORS*.

Currently, the maximum selectable length is 96 x 16ths although this can be exceeded if the **Loop Master** dropdown is set to *Off.* In this event XiiixxiQ will continue to run in accordance with the timeline of the DAW. If the DAW's timeline is set to loop then XiiixxiQ will similarly loop.

XiiixxiQ will generate its own, natural loop length which is defined by the Lowest Common Multiple of the active generators. If the [*Include Pitch*] button is selected on the [*Euclidean Rhythms*] page then the pitch sequencer length will also be included in this calculation. That is, *without* the [*Include Pitch*] option selected the entire sequence will loop *in time with the LCM of the Euclidean generators alone*.

The range of options available with reference to *what loops* and *when* is where XiiixxiQ excels in producing larger scale forms with subtle, developing variation over what can be very larger periods of time.

T h e **Loop Master** setting is NOT morph-able but can be controlled via automation if so desired.

[Mute]

The [*Mute*] button will mute ALL of XiiixxiQ's output. This can accessed via automation.

[Override Selected]

Selecting the [*Override Selected*] button reveals a new set of buttons that can be used to exclude individual sequencer settings from the morphing process. This allows you to edit and control different settiings to act across the whole morph. Without enabling this option the sequencer settings cannot be changed manually as the 'live' settings of the morphing process will change them back to the calculated current value almost instantaneously.

Enabling [*Override Rhythm Morph*] will free the Euclidean sequencers from the morphing process and [*Exclude Dynamics Morph*] will similarly override the Velocity Sequencer's morph. These two options can also be accessed via automation if [*Override Selected*] is active.

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[EUCLIDEAN RHYTHMS]

There are four identical Euclidean rhythm generators: Sequencers I, II III and IV. They act independently of each-other but their individual outputs are summed before being passed to the step sequencer.

Type
Each can be set to produce an output that affects the sequencer differently;

- { *Not Active* } – the generator is effectively OFF and there is no action sent to the pitch-sequencer

-

- { *Pitch* } - moves the pitch-sequencer to the next pitch step but does not trigger to play

- { *Rhythm* } – triggers the currently selected note but does not move it on to the next step

- { Pitch and Rhythm } – moves the step-sequencer to the next pitch and then triggers that pitch.

As the Euclidean generators are summed each step is the resulting combination of all of the individual generators contributing to that step. There is no discernable difference between two summed generators – one providing a { *Pitch* } event and the other providing a { *Rhythm* } event – and one generator providing a { *Pitch and Rhythm* } event.

Length In Steps
This represents how long the sequence is in 16th steps.

Triggers/Pulses
How many triggering events will be distributed during the above duration.

Offset
The number of steps the resultant Euclidean rhythm is delayed before triggering, and will continue to loop behind the original's (un-offset) pulse.

[*Reverse*]
The set Euclidean rhythm is triggered in reverse order if this is enabled. If **Offset** is then applied, it will be applied to this *reversed* rhythm.

[*Invert*]
The set Euclidean rhythm is inverted; that is all and any triggering event becomes silence, and any previous silence becomes a triggering event.

Step Speed
The speed of the Euclidean sequence is doubled, trebled, quadrupled ... etc as the basic triggering pulse – a 16th – is lengthened to become 2 x 16th, 3 x 16th, 4 x 16th ... etc.

All of these setting are morph-able and can also be accessed via automation.

The Viewer
The **Viewer** will show the state of the Sequencers over the length set in the **Loop Master** dropdown. GREEN for Pitch and Rhythm, YELLOW for Pitch only, BLUE for Rhythm only.

There is a track which shows when the pitch element is triggered and moves to the next step in addition to a track at the bottom which shows when a rhythmical event occurs. Looking at these two together will indicate how the sequence is moving along.

If **Loop Master** is set to { *Off* } the viewer will automatically disable itself. It can however be manually re-enabled using the **Viewer** dropdown in which case it will show the first @256 steps of the sequence currently generated by the Euclidean sequencers if it is longer than this, or all of it if it is shorter in duration.

Composite Rhythm Repeat
The **Composite Rhythm Repeat** information is based on the LOWEST COMMON MULTIPLE (LCM) of the active sequencers which are set to either { *Rhythm* } or { *Pitch and Rhythm* }. It gives the length of the current sequence in beats, and in 16th pulses. If the **Loop Master** setting is active then it will also try to work out how many LOOPS long the current sequence is based on the selected **Loop Master** length: ie. number of whole loops plus any *parts of an unfinished loop.*

If the [*Include Pitch*] button is enable it will also include the current pitch sequencer length in this calculation.

WARNING
The use of both the **Viewer** and the **Composite Rhythm Repeat** calculator is quite expensive on the CPU and so should be disabled when not really essential to the composition process.

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[SEQUENCE MORPH]

In its simplest form XiiixxiQ is a sequencer with no memory. The step sequencer and the Euclidean generators can be set at any time to whatever setting is required by the user. In reality though, XiiixxiQ has three FIXED POINTS – or memory locations – or patches – known as Roundels. These can be seen at the bottom left of most pages. These are designated [A], [B] and [C]. In order to morph between settings, those setting must first be saved to one of the Roundels. To do this you click on the yellow, outer circle of the desired target Roundel TWICE; once to select the Roundel as the target, the second time to save the setting to the Roundel. Once saved the Roundel's can be recalled at any time by simply clicking in the centre of the required Roundel.

WARNING

The settings and changes you make DO NOT SAVE AUTOMATICALLY and therefore MUST BE SAVED to a Roundel if you intend to come back to them at a later time, either during the same session or even at a later date. To save them in order to come back during a later session they must be SAVED EXTERNALLY via the [**Load/Save Presets**] page.

When XiiixxiQ first opens it auto-generates a randomised, but related, setting for each of the three Roundels. It then selects Roundel [A] as the initial starting point and loads it's settings into the sequencer. If you then edit the sequencer settings, the step sequencer itself, and/or the Euclidean sequencers, this edit is 'live'; it is not saved anywhere (except maybe as part of the song-file by Logic if the song is then saved). If you do not save it to a Roundel then selecting any of the Roundels will return the 'live' settings to that Roundel's stored settings.

It is because of this slightly unintuitive design structure that XiiixxiQ can morph between the stored settings. The morph itself exists in real-time, in the 'live' settings themselves. The stored Roundels are not edited during the process.

There are two [*Sequence Morph*] options; a 2-Dimensional A/B option which blends two different set-ups (Roundels) together as you move from one to the other, and a 3-Dimensional A/B/C option which can triangulate settings between three independent set-ups (Roundels). These can be selected using the two central buttons at the top of the page; [*Morph 2D*] and [*Morph 3D*]

The [*Sequence Morph*] page allows access to the morphing options. You can also choose to see the current [*Sequencer Settings*] by enabling the button on the top left.

[*Morph 2D*]

The 2-Dimensional morph moves between Roundel [A] and Roundel [B]. It can be done manually via the central **a/b sequence morph** slider at foot of the page. To enable this slider just enable either the [*A*] or [*B*] button situated at each end of the slide. Moving the slider from one to the other will generate a morph between the two stored sets of settings of these two Roundels. This can also be achieved through automation.

The central panel is a slider-based sequencer, moving between A and B, that can be used to shape the transition over time. The gap between any two settings slider is a *segment*, and the duration of this segment is set using the **Segment Timer** dropdown in conjunction with the **Timer Mult.** Dropdown, which can be used to extend the set time through multiplication of the basic pulse. The number of segments is controlled by dragging the YELLOW dot over the numbers.

The sequencer can be set to loop via the **Loop Path** dropdown. If not looped the sequencer will run through once and remain where it finishes.

To enable / disable the sequencer select the [*Animation 2D*] option.

The timing is tied to the timeline of the DAW and operates independently of the **Loop Master** setting although they can be set manually to run together.

Enabling ANY of the morphing options will dis-enable any other morph options currently running.

[Morph 3D]

The 3-Dimensional morph moves between all three Roundels.

To morph between the Roundels simply drag the blue indicator out of Roundel [A] and let go somewhere inside the triangle. You can do this while the main sequencer is playing. The closer the indicator is to any particular Roundel the more that Roundel's configuration will affect the current, live sequencer settings.

The morphed sequence is not stored, but generated 'live' by the position of the indicator. This means it can be recalled if the indicator is in the same place – but is not recallable by selecting any particular button. If you wish to store it permanently then it should be stored to one of the Roundels. This will of course affect how the morphed sequence results sound from then on as the configuration will now be different due to the changes made to the Roundel where you stored the new sequence.

The indicator can also be moved using the **Morph-X** and **Morph-Y** sliders – which can also be automated – but there may be some issues with regards to crossing the triangle's boundaries if this is not done with care.

Either of the axis may be [*locked*] in position stopping further movement in that axis.

The Animation feature is a bit of fun really. It will bounce the indicator around the inside of the triangle changing the sequence as it does so. Essentially random – and a bit glitchy – it can be used as inspiration, or to generate a more random section during recording.

To enable / disable auto-animation of the indicator within the triangle select the [*Animation 3D*] option. The speed of the animation is controlled by the **Animation Speed** slider on the right hand side of the page. The **Morph Sensitivity** slider controls the strength of the morph at any particular point and can be used to 'fine-tune' the changing shape of the resulting settings.

As with the 2D Morph described previously, enabling ANY of the morphing options will dis-enable any other morph options currently running.

Randomiser

The **Randomise Parameters** dropdown menu gives a granular approach to setting various parameters using controlled randomisation. Various scales and quantiser settings can be generated in addition to randomising the [*Pitch Sequencer*] settings, and/or the [*Euclidean Rhythms*]. The result of using *Randomise Parameters* will require saving in one of the three Roundels if you wish to edit and use it further.

There is also an option to auto-generate a set of three random, yet closely related roundels to give you a starting point for new pieces { *Auto Generate ALL Roundels* }, and another option to take the current global settings, store them automatically in Roundel [A], and then generate another two, closely related sets of settings and store those in Roundels [B] and [C] ready for morphing { *Auto Generate 2 Roundels* }.

You can also use the result of { *Auto Generate ALL Roundels* } for 2D morphing, and keep Roundel [C] as a place to store any interesting results for further usage.

Switching between the Morph 2D and Morph 3D option can be accessed via automation, as can the Animation button, and the A/B Morph [A] and [B] buttons.

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[PATTERN MATCH]

XiiixxiQ offers the opportunity to add your own custom rhythm to the mix. The resulting input will trigger the step sequencer as { Pitch and Rhythm } events.

The length of the custom custom rhythm is dictated by the length set in the **Loop Master** dropdown. If this is set to { *Off* } then the option to add a custom rhythm is disabled.

The rhythm can be input manually using the mouse, or it can be generated randomly using the [*Clear / Generate Random*] button with the [*R*] option to the left *enabled*.

You will need to click on [*Custom Pattern*] twice following the first time you enter a new [Custom Pattern] in order for it to become active in the sequencer. Following this the [*Custom Pattern*] can be muted by toggling the [*Custom Pattern*] button, as can the Euclidean sequencers by toggling the [*Euclidean Sequencers*] button.

Events can be removed from the [*Custom Pattern*] by clicking on them for a second time with the mouse – or the whole pattern can be cleared by using the [*Clear*] button – disengage the [*R*] button next to the [*Generate Random*] button if this option is not showing up.

[*Pattern Match*]
Pattern Match attempts to recreate any custom rhythm using the four Euclidean generators. The success rate is shown at the top of the page at the end of the process. The process is skewed to **not** put an event where one should not be, so there can be gaps in the rhythm if one or more of the events cannot be mapped. This generally happens when the chosen rhythm is longer and essentially randomly generated.

The [*Pattern Match*] process will attempt to use as few generators as possible to create a rhythm and will favour longer step lengths where possible as this can more easily be used to generate variations during any further morphing processes.

[*Pattern Match*] [+]
Making use of the [+] option allows the process to include the Euclidean generators' **Step Speed** option. This can be more successful in matching the given pattern, but is more difficult to manage in relation to creating smooth morph results if the result is to be subject to that process later on.

You may wish run any original [*Custom Pattern*] together with the pattern-matched Euclidean sequencers. If not, you can make use of the [*Mute Custom Pattern*] option to then stop it from triggering the pitch-sequencer. Conversely, you may may want to run both together and then use the generated [**Euclidean Rhythms**] to affect variation in and between the original events of the custom pattern by manipulating them with one of the [**Sequence Morph**] options.

Both [*Mute Custom Pattern*] and [*Mute Euclidean Sequencers*] are available through automation.

WARNING
THERE IS A KNOWN BUG DURING THE PATTERN-MATCHING PROCESS WHICH SOMETIMES RESULTS IN THE MATCH NOT TRANSFERRING CORRECTLY TO THE CURRENTLY PLAYING PATTERNS IN THE EUCLIDEAN GENERATORS. THIS CAN OFTEN BE RECTIFIED BY IMMEDIATELY SAVING THE RESULTS IN ONE OF THE ROUNDELS, SELECTING A DIFFERENT ROUNDEL TO LOAD ITS' PATTERN, THEN MOVING BACK TO RE-LOAD THE PATTERN MATCH FROM THE FIRST ROUNDEL.

If this does not work then the bug resides in the mis-loading of one of the [*Inv*] and [*Rev*] patterns for any one of the generators – as to which generator is totally random. I usually move systematically from one to the next turning on/off, and then back on/off again, each of the [*Inv*] and [*Rev*] buttons until it sorts itself out. Using the **Viewer** can help with this. It will only take a minute. Please ensure you SAVE THE CORRECT RESULT in your chosen Roundel before changing anything else.

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[SUBSETS]

A little background may be required to understand the concepts behind this feature.

My vision of the Euclidean subset relationships are derived from, on one hand, Schoenberg's concepts of the TONE ROW as expounded in his theory of SERIALISM, and on the other, ALLEN FORTE's exploration of SET THEORY in his book 'The Structure of Atonal Music' which makes practical use of Schoenbergs' structures.

The basic Euclidean Rhythm as generated (using, in the case of this XiiixxiQ, Bjorklund's algorithm) is designated as PRIME. Playing it backwards is designated RETROGRADE. Swapping silences for events and events for silences constitutes INVERSION. Playing this backwards results in RETROGRADE INVERSION.

On the [**Subset**] page, all Euclidean Rhythms are described in the following manner:

E + (Total Steps, Total Triggers) + [Prime| Retrograde | Inversion | Retrograde Inversion]

OR

E + (X, Y) + [prime | inversion | retrograde | retrograde inversion]

When being used as part of a ***Komplex*** (see below), the E may be prefaced with K, for Komplex. This is just as a reminder to the user that they have engaged one of the Komplex options rather than Subset options.

Example 1

E(5,3) [prime] =	E(5,3)p =	[X . X . X]
E(5,3) [retrograde] =	E(5,3)r =	[X . X . X]
E(5,3) [inversion] =	E(5,3)i =	[. X . X .]
E(5,3) [retrograde inversion] =	E(5,3)ri =	[. X . X .]

Example 2

E(8,3) [prime] =	E(8,3)p =	[X . . X . . X .]
E(8,3) [retrograde] =	E(8,3)r =	[. X . . X . . X]
E(8,3) [inversion] =	E(8,3)i =	[. X X . X X . X]
E(8,3) [retrograde inversion] =	E(8,3)ri =	[X . X X . X X .]

The subset relationships are derived in two main ways. Either a set IS as subset of another set in which case it is designated as such; [*Event Distribution – Subset*], OR a set is partially a subset of another set, in which case it it given a percentage score depending on how many elements (both silent and triggering) match up; [*Event Distribution – Hybrid*].

A SUBSET is a 100% match. A HYBRID result is a relative percentage match.

There is a further relationship based on the time, or pulse INTERVAL content, that can be used to create subsets; [*Event Intervals – Hybrid*], which is also given as a percentage match score.

The HYBRID matchings provide a larger results pool than purely those produced based on 100% subset matchings, but they are often less useful due to the 'distance' of the relationships. To this end there is a **Subset Variance** slider which can change the lower limit percentage that counts as a PASS , from a 100% to a 70% match; the slider shows the *allowable* variance - from 30% to 0% - from the 100% match.

Each of the resulting subset groups can be filtered using the [*Filter*] buttons to the left of the subset viewer. Playing with different combinations of these is highly recommended.

The *Subset Triangle* in which the results are displayed show the active subset relationships from set E(3.2) up to E(32,31). The display at the top precisely describes the currently selected set, including its flavour (prime, inversion .. etc) together with how many active subsets there are depending on the **Subset Variance** setting AND the filters on the right hand side of the page. The subsets are shown in GREEN with their **strength of colour** showing how 'related' they are to the chosen **Primary Rhythm** – which is highlighted with a GREEN SQUARE OUTLINE

The *Subset Triangle* is shaded to show where, to the left, the number of pulses/triggers is less than half of the size of the overall pattern, and to the right, where they are more in number.

Some sets have been omitted from the results list:
Those where the number of events EQUALS the number of overall steps – E(3,3), E(4,4) E(5,5) .. etc.

Those where the number of events is HALF the number of overall steps for an even number of steps – E(4,2, E(6,3), E(8,4) .. etc.

Those where the numbers of events is HALF the number of overall steps rounded downwards for an odd number of steps – E(5,2), E(7,3), E(9,4) .. etc.

These sets are available to select and use but their relationships to others are not made use of because they are too numerous, and essentially of too similar content, to provide any meaningful information – more than doubling the total number of inter set-relationships.

Subset Triangle

Selecting a subset using the *Subset Triangle* load that set into the **Primary Rhythm** – which is in reality **Sequencer I**, where it is then rendered to the sequencer. Only Sequencer I is linked to **[Subsets]**. The rhythms that are produced using this process exist in the 'live' section of the sequencer only and are not saved to any Roundel automatically. The **Subset Sequencer** exists to sequence any progressions or changes if that is what is required.

The Komplex

The concept of the Komplex can be seen clearly using the dropdown above the *Subset Triangle*. The default setting is { *Komplex [progressive]* }

{ *Komplex [progressive]* }
When using this setting, selecting a set, by either clicking on the *Subset Triangl*e or by manually adjusting the **Primary Rhythm** generator (**Sequencer I**), will show all of the sets related to the chosen set, depending on the **Subset Variance** slider setting and the [*Filters*]. These include both sets that are SUBSETS OF the Primary Rhythm AND those of which the Primary Rhythm is also ITSELF A SUBSET.

A Komplex is a collection of sets which share a subset relationship with the **Primary Rhythm** *– either they are a* **subset of***, or a* **superset including** *that rhythm.*

The **progressive** element of the { *Komplex [progressive]* } setting is to indicate that selecting a NEW **Primary Rhythm** will result in a new Komplex being described. This is in opposition to the **static** setting which allows you to select a set to be played *without* leaving the current Komplex or Subset group.

{ *Komplex [static]* }
This allows a Komplex to be selected which does not change when a new **Primary Rhythm** is selected allowing you to move around within one fixed set of relationships.

{ Subsets *[progressive]* }
Selecting the { *Subsets* } setting displays only the sets which satisfy the current subset relationship settings. These sets are always smaller than the **Primary Rhythm**.

{ *Subsets [static]* }
This allows a net of subset relationships to be selected which do not change when a new **Primary Rhythm** is selected again allowing you to move around within one fixed set of relationships.

{ GENERATE AUTO-KOMPLEX }

{ *Generate Auto Komplex* } takes TWO user-selected Komplexes (A and B) and shows the relative relationships shared between them through their common subsets. Each of the Komplexes are given a colour – either RED or BLUE – and, as with the static and progressive options above, the strength of the relationships within each are highlighted through their own **strength of colour.**

To select a Komplex and assign it to be either A or B just enable the **tick-box** to the right of the bottom of the *Subset Triangle. Information is also given about the number of subsets for this chosen set AND, if this is the second choice, how many subsets it has in common with the first choice.*

When the first Komplex has been selected the *Subset Triangle* then automatically treats any further selection as a potential second, (B), Komplex and displays how that selection interacts with the first. Both sets of subsets are now shown with their colour a '*merging*' of RED and BLUE depending on their relative distance from either, or both.

The **K-Matrix** percentage is an indication of how varied the relationships are; the higher the number, the wider the span of inter-related sets.

To change one or other of the chosen **Primary Rhythms** merely *untick* the box, select a new set and then *re-tick* the box when you have found what you are looking for.

Once BOTH Komplexes have been selected you can move around within the *Subset Triangle* selecting sets without losing the structure created by the current selections as in the case of *{ Komplex [static] }*

SUBSET SEQUENCER

The **Subset Sequencer** allows the currently selected set – the one currently loaded as **Primary Rhythm** (or **Sequencer I**) – to be loaded into a list of sequences that can be re-played as an ordered progression, or sequence of sets. Entries into this last can be **appended** (by default), can r**eplace**, or can be **inserted** *after* the currently playing set. They can also be **removed** from the current list.

To play the sequence just hit the green [>] play button. This will turn into a red [||] pause button when it is active and the sequence (if it exists) is being played. The sequence will automatically loop from the beginning when the last set has finished playing.

The Subset Sequencer's PLAY [>] button can be accessed via automation.

To enable the use of **[*Subsets*]** whilst morphing there is the option to exclude the **Primary Rhythm** generator from the morphing process by enabling the [*Ex.*] button. This can also be accessed via automation.

{ GENERATE AUTO-KOMPLEX }

Whilst using the **[Subsets]** page, once you have selected your two chosen *Komplexes* as part of the { *Generate Auto-Komplex* } process, you will be able to load any of the auto-generated structures that can be found in the lower half of that dropdown. These are simple **AB** or **ABA** structures, of different lengths, that make use of the variance between the subsets of each chosen komplex to move from one to the other over time. Because they are loaded into the subset sequencer you can try them out and edit the list if required.

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[*LOAD/ SAVE PRESETS*]
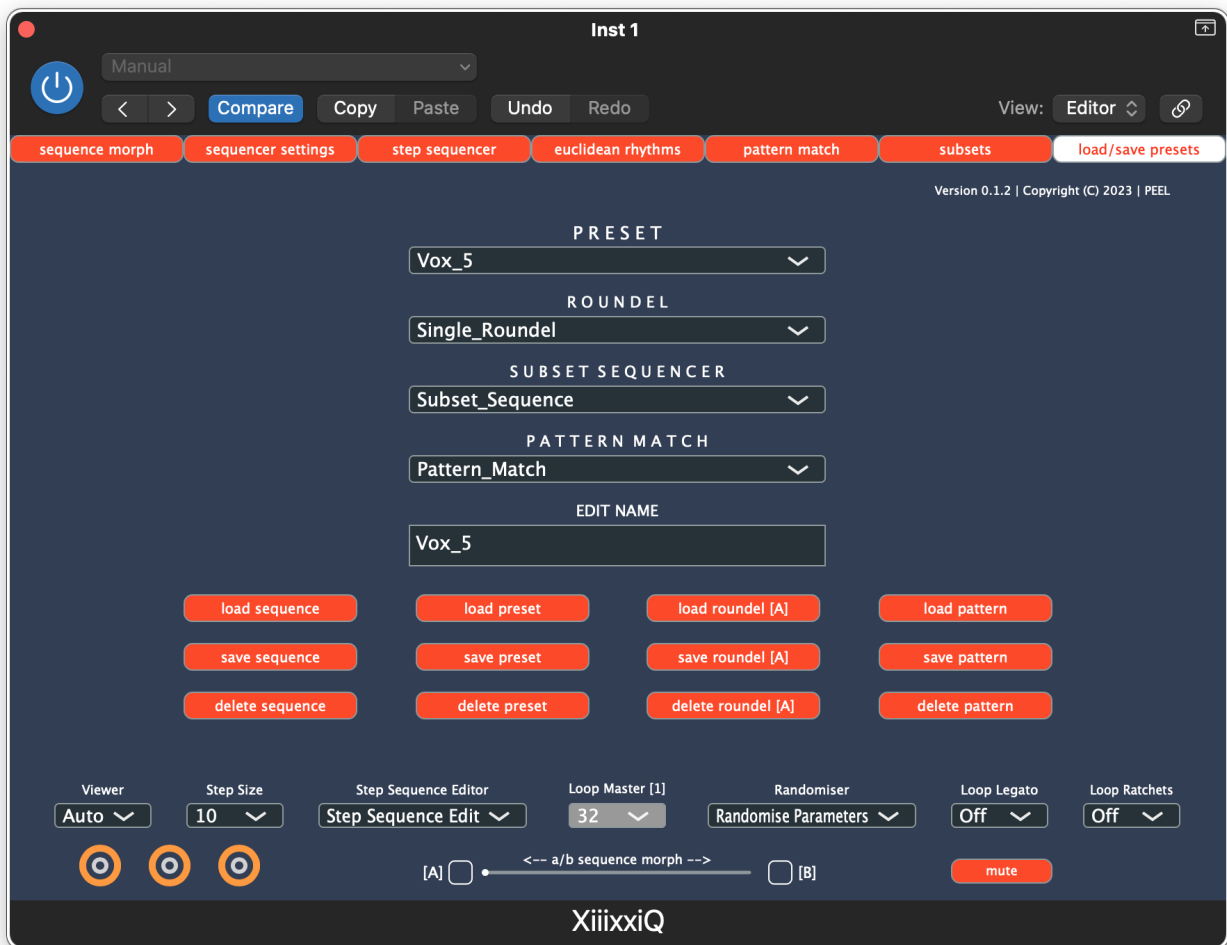
You can use this page to LOAD and SAVE a variety of settings

- **PRESET** : ALL the settings for a single instance of XiiixxiQ. This includes every settable parameter – unlike saving a single Roundel (see below) which only includes the content of the pitch-sequencer, the sequencer's settings and the state of the Euclidean generators.

- **ROUNDEL** : The settings for a single Roundel – always Roundel [A], which can then be saved to the Roundel of your choice. In order to save the required settings they should first be stored in Roundel [A]. When loaded back into the sequencer you can save them where you like.

- **SUBSET SEQUENCER** : The play list for the current Subset Sequence.

- **PATTERN MATCH** : The Custom user pattern from which the match can be (re)made.

The presets are stored in a designated folder system in your Shared folder which is created the first time XiiixxiQ runs on your system – or again if the current folders can not be found.

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