Warp Visualizer User Manual

Warp Visualizer version: 1.2.1

Warp Visualizer was designed to be easy and intuitive to use. If you're ready to jump in and start playing with the app, go for it! However, it's highly recommended, at a minimum, to read the manual through the Important Concepts (Section 6).

If you haven't yet purchased a copy of Warp Visualizer, you can do so at the Apple App Store at https://apps.apple.com/us/app/warp-visualizer/id1420378308#?platform=ipad

Change Date	Description of Changes
Aug 17, 2019	Initial Version
Dec 31, 2019	Added chart sharing info (sections 7.6, 10.3). Updates to section 10.4
Feb 26, 2020	Warp Visualizer v1.0.1: Added "Ignore Column Colors" in section 8.13
Mar 26, 2020	Warp Visualizer v1.1: Added Block Ratios, Symbol Grid and Share Thumbnail
July 11, 2020	Warp Visualizer v1.1.1: Editor toolbar More action in section 8.11; Show Thumbnail Overview for Chart editor in 8.13; Show Thumbnail Overview for Weaving Tracker in 9.8.
Nov 2020	Warp Visualizer 1.2: Added Weaving Projects in Library. Multiple changes throughout manual to reflect new functionality.
Jan 10, 2021	Updated name of user group on Ravelry to https://www.ravelry.com/groups/knit-foundry-user-group
Feb 8, 2021	Warp Visualizer 1.2.1: New editor features: new option for charts to display column colors in exports & Select All Rows / Columns

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1 ACKNOWLEDGEMENTS

I want to thank several people for their help in the creation of this software. First and foremost: huge thanks to Laverne Waddington (backstrapweaving.wordpress.com). She taught the workshop where I learned Andean Pebble Weave and first became interested in creating software for this type of charting. In the workshop, we learned many things and I found the weave structure to be fascinating. Thanks to Tara Hernandez for telling me "Take this weaving workshop – it'll be great!" I had no idea what I was really getting into, but she was right – it was great! Tara Hernandez, Ann Hamburg and Marie Ekberg all were tireless beta testers. They let me toss crazy ideas their way and were wonderful at gently telling me when I wasn't making any sense. ☺ Many of the features in Warp Visualizer are a result of their efforts and enthusiasm as we took workshops, had weaving get-togethers, and they suffered with the early versions of the software that had limited functionality and were more rustic and less polished.

Also, a huge thanks to all the countless artisans/weavers, teachers and students who continue to keep this amazing craft alive. I hope Warp Visualizer will help encourage a new generation of weavers to continue to learn, experiment and pass on their knowledge to others.

2 SUPPORTED CHART TYPES

Warp Visualizer is designed to create warp faced weaving charts for a variety of types of weaving: pebble weave, complementary warp pickup, Inkle weave, double weave, and supplementary warp and weft, among others. These are often woven on a backstrap loom. Warp Visualizer lets you explore designs for these types of weaving virtually, before setting up a warp and weaving it.

The following table gives you an idea of the types of weaving, and which type of chart you would want to use in Warp Visualizer (See section 5.2 for information on how to specify the Chart type when creating a chart):

Weaving Type	Chart Type	More Info
Pebble Weave	Block	backstrapweaving.wordpress.com
Supplementary Weft	Oval	backstrapweaving.wordpress.com/tutorials/tutorial-supplementary-weft-patterning
Double Weave	Oval	backstrapweaving.wordpress.com/tutorials/tutorial-one-weft-double-weave
Inkle bands	Oval or Block	aspinnerweaver.blogspot.com
Simple Warp Floats	Block	backstrapweaving.wordpress.com/tutorials/tutorial-simple-warp-floats
Complementary Warp Pickup	Block	backstrapweaving.wordpress.com
Baltic Weaving	Block	https://www.amazon.com/Weaving-Patterned-Bands-Pattern-Threads/dp/0764355503 (There are also many excellent free tutorials on the internet)

3 SUPPORTED DEVICES

Warp Visualizer was written from the ground up as an iOS app. It will run best on most recent iPads such as an iPad Pro, and requires iOS 12 and up. Older devices will have a harder time with larger charts (large being more than 100 rows and 100 columns). Warp Visualizer works best on an iPad as you have the most space to design charts of any size. See Figure 1 for a quick glance at how the main Library looks different between an iPhone and an iPad. The iPhone will show folders above charts, the iPad uses the left side of the screen for folders, and the right side for charts. (Note: We might stop supporting the iPhone device size in future versions of Warp Visualizer due to such limited screen size).

For the very best experience with Warp Visualizer, we recommend an iPad Pro that supports an Apple Pencil. Our beta testers found that when they used an Apple Pencil, they were able to make edits more accurately while zoomed out farther in their charts. The Apple Pencil isn't required though, and you'll still be able to make amazing charts without one.

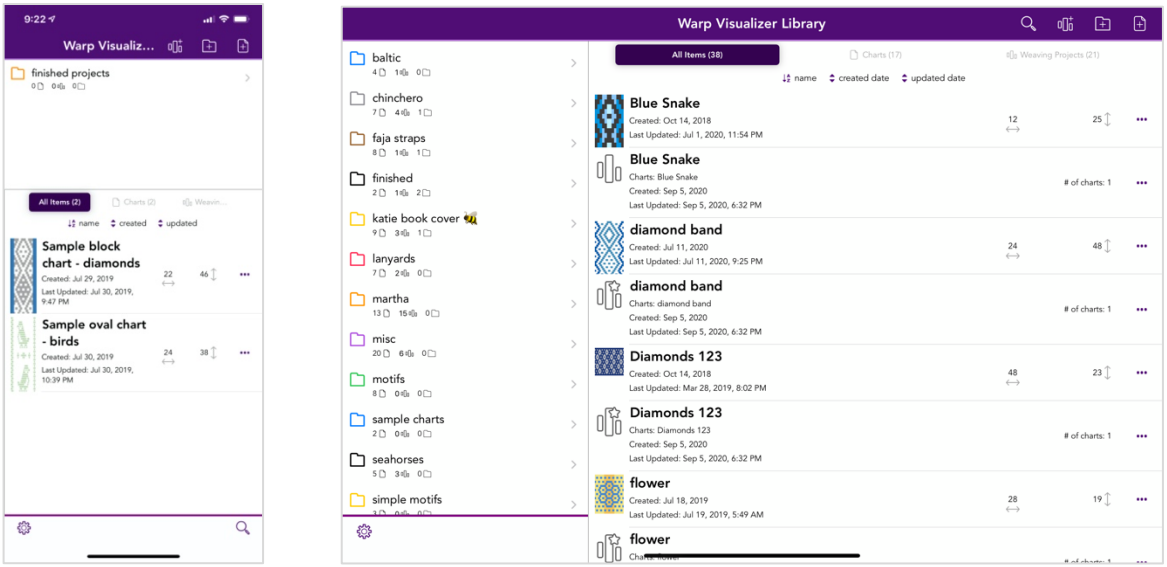


Figure 1: Library shown on iPhone Pro 11 Max and iPad Pro 11"

Note: Most screenshots for this User Manual were taken on an iPad Pro 11", with a few on a 12.9" iPad Pro.

4 WANT MORE HELP?

This manual is meant to be fairly comprehensive, but we know you'll come up with questions that it can't answer. The best place to get help is in our user group on Ravelry:

https://www.ravelry.com/groups/warp-visualizer-user-group

You'll find lots of friendly folks there to help answer your questions! You'll need to create an account on Ravelry if you don't already have one, but it's free and there are lots of great resources there for fiber artists of all types.

This manual is not meant instruct you on how to weave, rather how to use Warp Visualizer to design your patterns more easily so you can get to weaving them.

If you're interested in tutorials and/or learning to weave warp faced structures, I recommend you visit Laverne Waddington's blog at https://backstrapweaving.wordpress.com/. She has instructional videos, blog posts, and sells many books that can help you learn weaving. Many of her books contain charts that you can easily use Warp Visualizer to re-create and then modify the designs.

Links to specific resources are available in the Resources section.

5 QUICK START

5.1 Library Overview

The Library is the main screen, which is displayed the first time you run Warp Visualizer. The second time (and anytime after) you run the app you'll come back to wherever you left off – editing, browsing a specific folder, or in the weaving tracker. Charts are stored in your library inside the top-level folder "Chart Library", or in subfolders that you create inside the Chart Library. Folders work similarly as they do on your computer file system – you can have charts inside folders, folders within folders, etc.

The very first time you run Warp Visualizer you'll have two sample charts in your Library, but no folders. See Figure 2 (note – sample charts might be slightly different than what's shown).

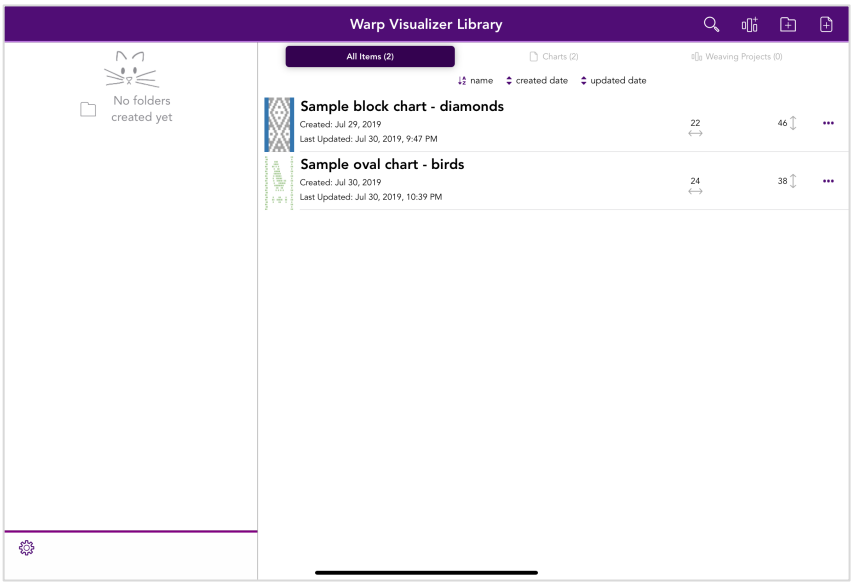


Figure 2: First time view of Warp Visualizer with sample charts

The left side of the Library lists folders, and charts and weaving projects will be listed on the right. Underneath each folder name, small icons and numbers indicate how many charts, weaving projects and folders are directly in that particular folder. See Figure 3 for an example, and other important areas in the Library screen.

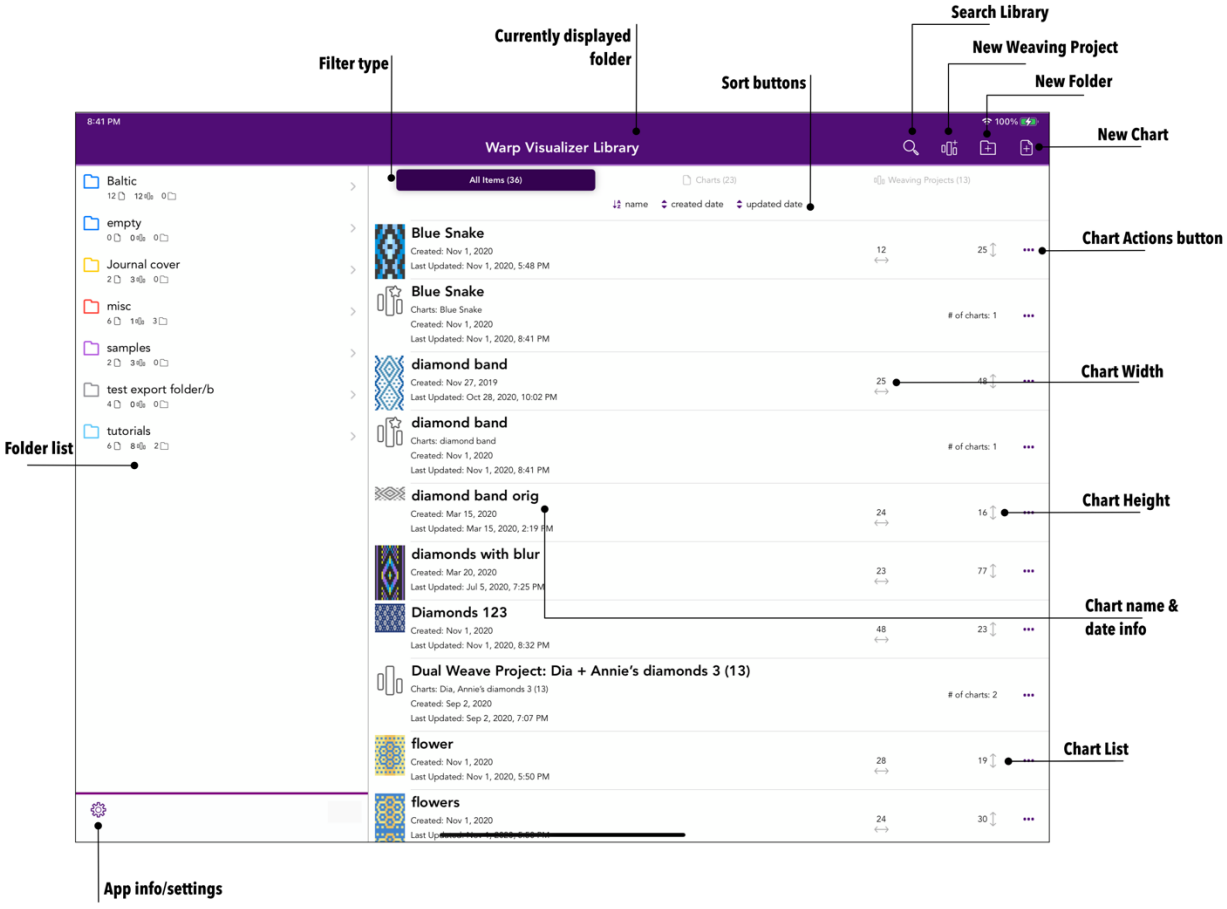


Figure 3: Chart Library

Section 7 goes into detail on everything you can do from the Library, but for now you should know that tapping on a chart row will take you to the chart editor (see Section 0), and the ••• button on each chart row has a list of actions that can be performed on that chart (see Section 7.4). Tapping on a weaving project row will take you into the weaving tracker for that project, and the ••• button will provide a list of actions that can be performed on that project.

Folders can contain other folders. If you've navigated down into one of those folders, the Library looks slightly different and it will now show a 'breadcrumb' trail under the list of folders as shown in Figure 4.

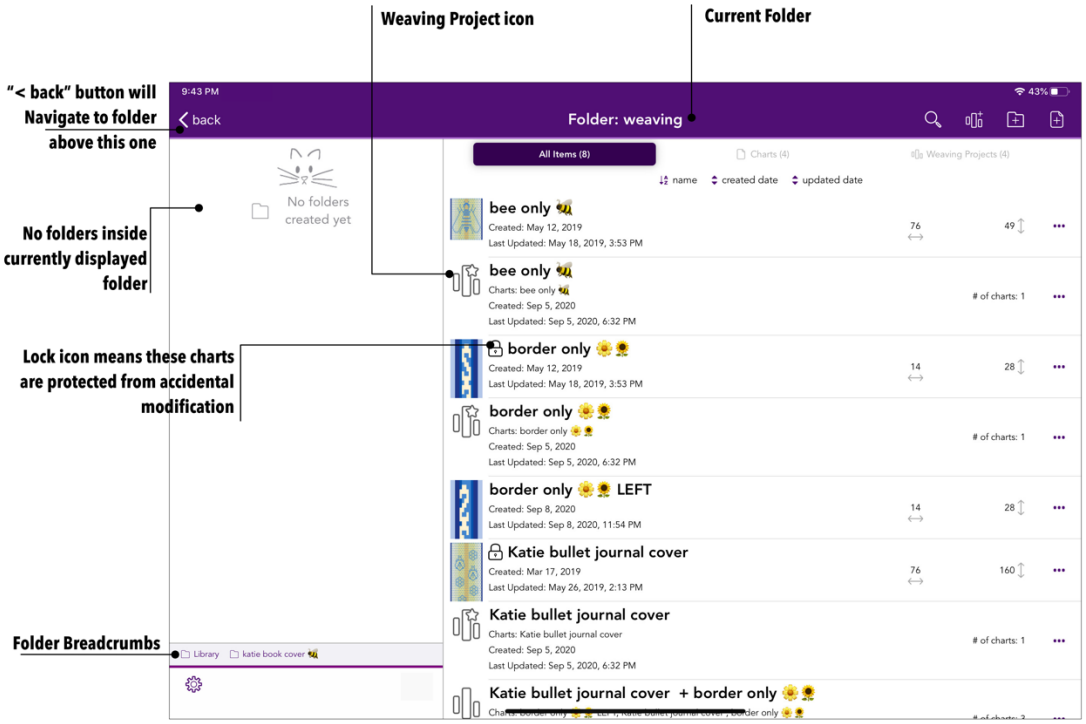


Figure 4: Chart Library showing sub folder

In Figure 4, the user has navigated from the Chart Library into a folder named "katie book cover" and then one more level down into a folder named "weaving". The title of the whole window changes to show the folder you're viewing. The "weaving" folder has several charts and weaving projects in it, and no sub-folders. You can tell where you are in the folder hierarchy by looking at the 'breadcrumb trail' on the bottom left of the folder list. This is where you'll see the names of folders that you've navigated through ("Library" & "katie book cover") to get to the current view. Tapping any of those folders in the breadcrumb area will navigate back to that folder directly, or you can navigate to the folder above this one by using the "< back" button at the upper left of the screen.

Figure 4 also shows what a chart looks like when it's "locked" and you can't make changes to it. (See the table in Section 7.4 for more information on locking/unlocking charts)

Any folders, charts or weaving projects you create will be placed inside the folder currently shown in the Library.

5.2 Creating a Chart

Select the New Chart button, found in the upper right of the Library to create a new chart. This will bring up the New Chart form, where you can configure your chart. Figure 5 shows the New Chart form, with important areas labeled.

If you decide you aren't ready to create a chart, simply hit the 'x' in the upper left of the form to dismiss it without creating anything.

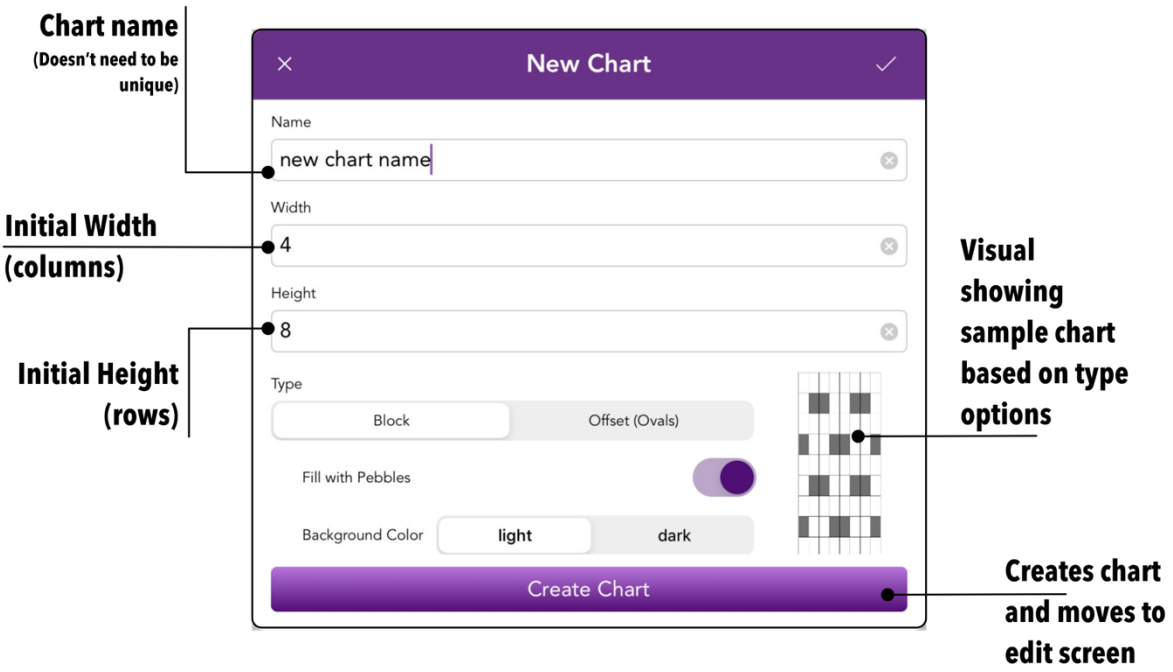


Figure 5: Create Chart form

When the form first pops up, your cursor will be in the Name field. All the other fields have a default value, but you'll need to enter a name for your chart before you can create it. Chart names can include alpha numeric characters and emojis 🐱. Once you've entered some text in the Name field, the Create Chart button will be enabled and no longer grayed out.

The Height and Width fields start with default values. These can be changed to any integer and represent the number of rows and columns in the new chart. Rows and columns can be added and deleted at any time while editing your chart – so don't worry about being exact with these numbers.

The Chart Type determines how the chart is drawn and some defaults for how the initial colors are used. Block charts have rectangular blocks that are taller than they are wide, and Offset (Oval) charts use ovals where each row is shifted by half a block off the row below/above it. Once the chart has been created, you can't switch between block or offset, but you'll be able to change almost anything else about it.

On an iPad keyboard you can use the Tab button to move between the text fields in the New Chart form. (iPhone doesn't have a Tab button on the keyboard, but you can simply tap on the field you want to edit)

If Block Chart Type has been selected, the Fill with Pebbles and Background Color options are enabled. A basic pebble pattern is created in your chart if you select Fill with Pebbles, using the specified Background Color. The sample chart will update as you modify the options.

Once you have all your options selected, tap the "Create Chart" button (or use the checkmark in the upper right corner) and you'll be taken into the Editor with your new chart.

5.3 Creating, Editing & Deleting Folders

To keep your charts organized, Warp Visualizer lets you create folders to organize your Library. The Create Folder button is in the upper right corner of the Library.

Figure 6 shows the Create Folder dialog after you've started typing a folder name (when first displayed, the "Create Folder" button is grey and can't be tapped until you enter a Folder Name). In addition to its name, a folder can be assigned a color. There are eleven colors to choose from, and the default is black. Clicking the "Create Folder" button will create your folder, and it will be put into the folder list on the left side of the Library. If you change your mind and don't want to create the folder, tap the 'x' in the upper left of the Create Folder form.

Once you've created a folder, you can edit either the name or color. To bring up the edit dialog swipe to the right on the folder in the Library, and select the "Edit" button to the left of the folder name. You'll see the same form as in Figure 6, but the title will say "Edit Folder" instead of "Create Folder"

To delete a folder, swipe to the left on the folder in the Library, and select the "Delete" option. You'll be asked to confirm that you want to delete the folder before it really happens. NOTE: You cannot delete a folder unless it is completely empty of all contents first.

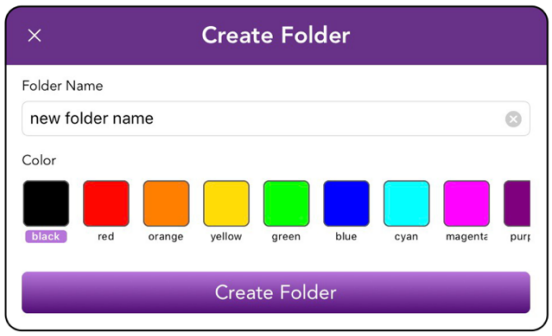


Figure 6: Create Folder form

5.4 Creating a Weaving Project

To create a weaving project, you can use the button in the upper right of the main Library screen. You'll be prompted on which charts you should include in your project. We'll cover those screens in Section 9.1.

This section was meant to show you just the basics and enough to get started. The rest of the manual will provide details on all the features available in Warp Visualizer. Have fun!

6 IMPORTANT CONCEPTS

6.1 Light and Dark colors

Warp Visualizer was designed from the ground up to help you design charts for warp-faced weaving. Each column on the chart represents a pair of threads: a Light/top thread and a Dark/bottom thread. To simplify terminology, we'll use the terms Light and Dark. Your threads can be any color and at times your Light thread might be darker than your Dark thread.

Each block inside your chart can be either a Light or a Dark color. If you tap a Light colored block, it will switch to be the Dark color and vice versa. By default, the chart has a Light color (white) and a Dark color (medium gray) defined that you can change at any time. When you change the definition of Light and/or Dark in Chart Options, all the blocks are now painted with the new colors. See Section 0 for more details on editing charts.

Here's an example with two different types of chart. The first image of each chart has the default colors (Light = white, Dark = medium gray), and the only change in the second chart is different Light/Dark colors (Light = pale purple, Dark = dark purple):

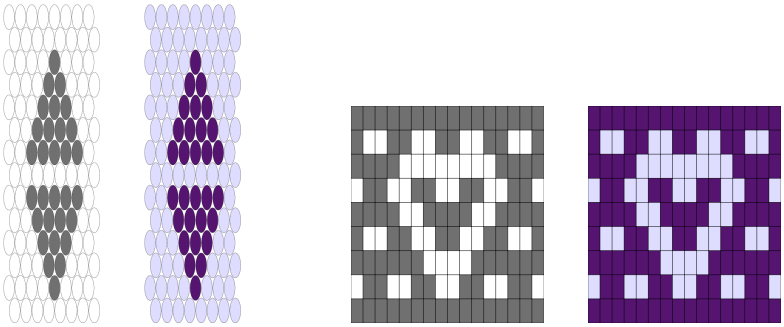


Figure 7: Changing Light and Dark colors

Because your weaving might not be comprised of only two colors, you can change the definition of Light and Dark for each individual column. Remember each column represents a pair of threads. In Figure 8, we've changed the colors for some of the columns. In the first chart (and Offset oval chart), we added two additional columns on each side, and changed the light color to use blue. In the second chart we changed the columns that contained the heart to use light pink for the Light.

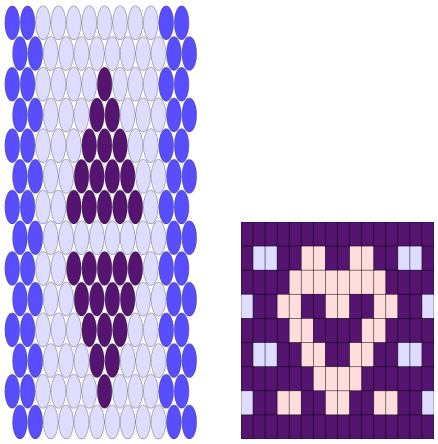


Figure 8: Using Custom Light/Dark colors for some columns

These are pretty simple examples, but should illustrate the concepts. Overall: for a particular block, it will use the column's definition of Light or Dark if defined, or fall back to the chart's definition of Light and Dark. In later sections of the manual you'll learn how to set those colors to get the look you want.

6.2 Example Charts & Woven Bands

This section will show you some charts and their corresponding woven bands. This will give you an idea of the different ways you can design in Warp Visualizer.

6.2.1 Pebble Weave

When weaving, the manipulation of the pairs of threads allows you to form motifs. Different types of weaving will result in different looks. Our first example is a Pebble Weave style chart and the band woven from that chart showing both the back and the front (Figure 9).

In this example the entire band was charted in Warp Visualizer. Later you will learn how to set a repeat in the Weaving Tracker, so your charted band only needs one instance of the repeating pattern. For this case though, I decided to chart the whole length of the bookmark for fun. On the third bookmark (not shown) quick alterations were made to the pattern in Warp Visualizer to make it longer and finish using up the remainder of the warp.

Figure 9: Pebble Weave chart and woven bookmarks (front & back)

6.2.2 Double Weave

With Double Weave, you have a top layer and bottom layer of contrasting colors. As you switch threads between the bottom and top layer, you end up creating a pattern on both sides of the weaving. See the Resources listed in Section 0 for links to resources for learning different types of weaving.

Figure 10 shows an example Double weave chart and both sides of the band.

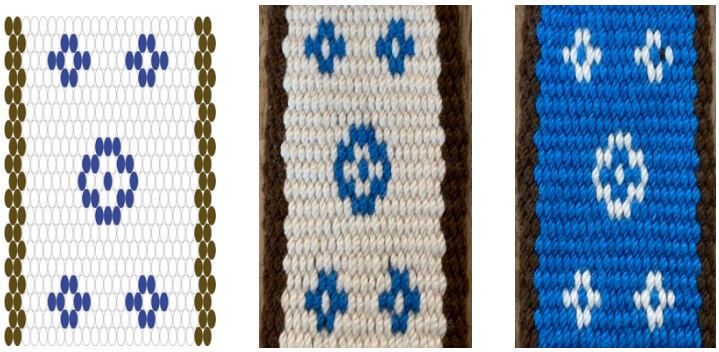


Figure 10: Example Double Weave chart & woven band

6.2.3 Supplemental Weft

With supplemental weft, you're laying another color (or colors) on top of the woven band in each row to form a motif. We represent the supplemental weft thread by changing the color in a chart. Figure 11 shows two Supplemental Weft examples charted in Warp Visualizer and then woven up on a sample band. The larger bird uses several strands of different colors for the supplemental weft, giving the bird more depth and interest.

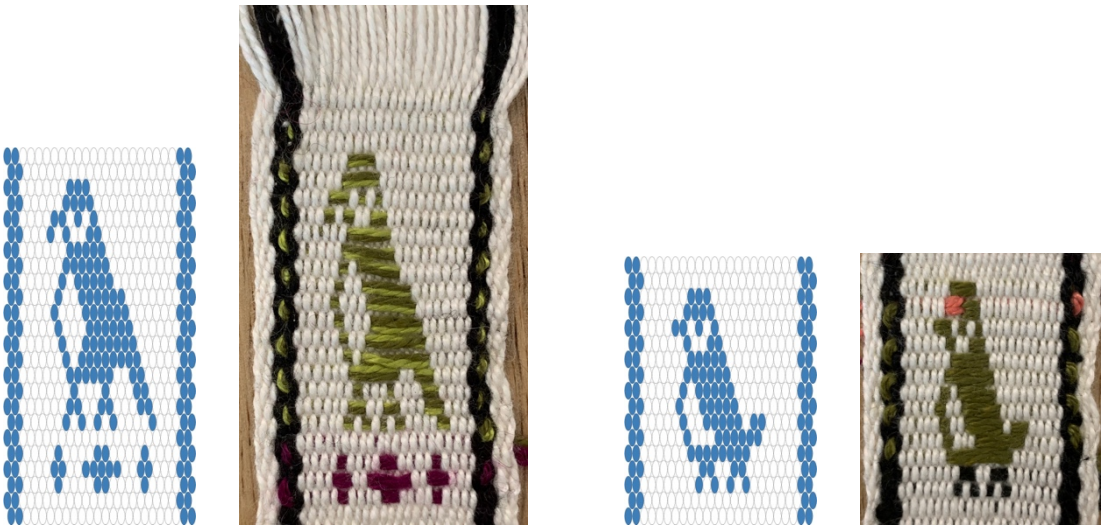


Figure 11: Supplemental Weft charts & woven bands

6.2.4 Supplemental Warp (Baltic Pickup)

You can use Warp Visualizer to represent Baltic pickup style charts easily using the Symbol Grid options. Baltic pickup is a weaving technique that creates warp floats using pattern threads on a background fabric. The chart represents which pattern threads should be lifted to make the motif. For more information about Baltic pickup there are lots of good resources online. I highly recommend the book *Weaving Patterned Bands: How to Create and Design with 5, 7, and 9 Pattern Threads* by Susan J. Foulkes which has a lot of great patterns.

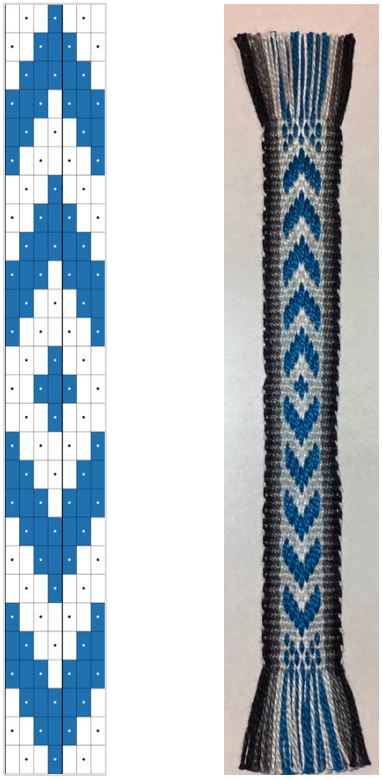


Figure 12: Supplemental Warp example chart and woven band

6.2.5 Inkle Loom

Inkle loom weaving can also be designed using Warp Visualizer. Typically, you only need two rows to represent the two different sheds in the loom setup – one for the top shed, and one for the bottom but it's fun to show more than two rows to see how the weaving would look. You use custom colors for columns to show which threads are which colors. In the sample shown in Figure 13 it's been designed so that both edge threads are in the top shed; so you'll see every other row at the far right is left white. That's just to indicate there's no thread there on the bottom shed. (the last column isn't a pair of threads, it's only a single thread). As of Warp Visualizer version 1.1.1 (July 2020) you can use the option "Odd # of Warp Threads" in the Chart Options for an oval chart to eliminate showing that oval completely.

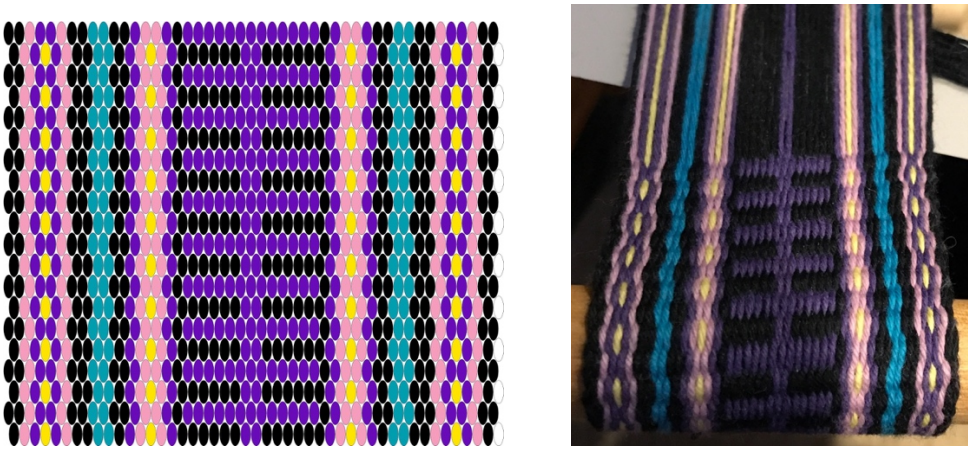


Figure 13: Inkle weaving chart & in progress woven band

Thanks to Tara Hernandez for allowing me to share her charts and photos of her weaving for this section of the manual. The block chart bookmark was based on a pattern she created called 'dancing seahorses' and woven by me (so all mistakes are mine!), and the other charts and woven pieces are hers. You'll find one of the bird patterns is included for you as a sample chart when you first install Warp Visualizer.

6.3 Where does your data live?

Warp Visualizer saves all your charts to your local device as soon as you make changes so it's fast to create and manipulate charts (making the app more responsive). This also means you don't need access to the internet to work in Warp Visualizer!

That data will be backed up as part of your regular iTunes or iCloud backup. If you ever have to restore your device from a backup, your charts will still be there, but ONLY if you've created a backup before doing the restore! I encourage you to regularly backup your device so you don't lose all your hard work. If you need to restore your device from backup, you'll notice that your charts only have a generic icon instead of a thumbnail for each chart in the Library. You can regenerate an individual thumbnail by entering the editor and exiting it again; or you can re-generate all thumbnails using the option inside Application Info/Settings. (see Section 7.6 for more details).

You can also save specific charts by emailing them to yourself, or to your friends. See Section 10.3 for more details on that.

7 LIBRARY

The Library is where you'll organize your charts. For each chart you'll see its name, width, height, date created, date updated and a thumbnail. If you have weaving projects in your library and are filtering by "All Items", you'll also see weaving projects in the list. On the left you'll see a list of folders. From the Library you can create a new chart, weaving project or folder, and can take a variety of actions on a chart including editing, moving, deleting, exporting, etc. Figure 14 shows a typical Library, that has some folders, and a combination of charts and weaving projects.

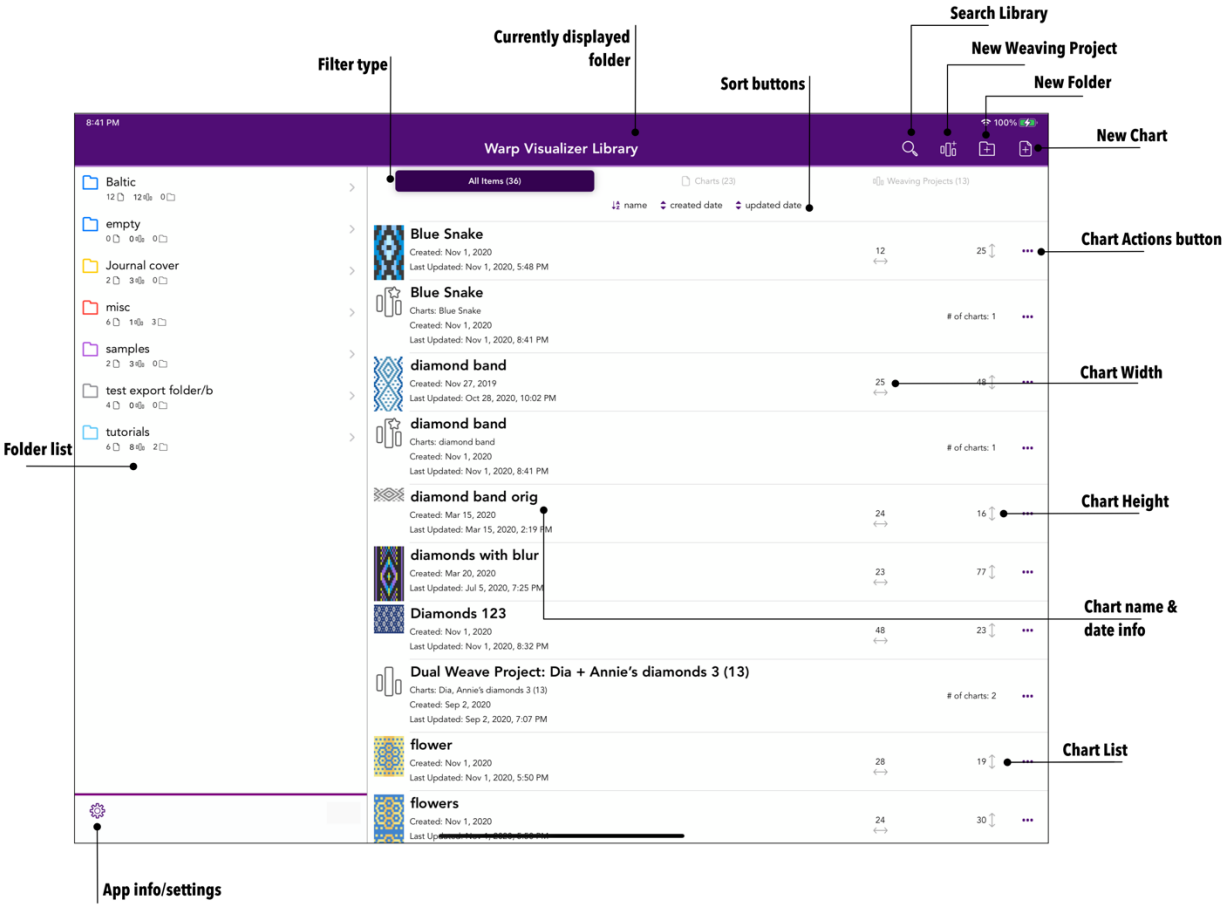


Figure 14: Library

Folders contain details underneath each folder name that indicate the number of items in each folder.

Figure 15: Folder details

In the example shown in Figure 15, there are 2 charts, 1 weaving project and 1 folder directly inside the folder named "animal charts". If there are other files/folders inside the sub folder, those are not indicated in this view.

7.1 Chart, Weaving Project & Folder Actions (Gestures)

This table shows the different actions you can perform on items in your library by using various gestures.

Action	Gesture
Edit Chart	Tap anywhere on a chart or weaving project row. The app will open either the chart editor (see Section 8 below) or weaving tracker (See Section 9)
Delete Chart or Weaving Project	Swipe to the left on the row for a chart or weaving project. Either select the "Delete" button, or swipe all the way to the left. You will be prompted to confirm you want to delete the item, and once confirmed, the delete is irreversible.
View Folder Contents	Tap on the folder name to view its contents, which will be shown in the Library. Any charts inside it will be shown on the right, and folders on the left. You'll see the folder name at the top of the screen (instead of "Chart Library"). The breadcrumbs under the folder list will change, showing you the path from the Chart Library to your current location so you can easily navigate back. You'll also see a "< back" option at the upper left of the screen to navigate back up one level.
Edit Folder	Swipe to the right on a folder. You can swipe all the way to the right, or partially and an Edit button will be shown that you can tap. You'll be able to edit the folder name and color.
Delete Folder	Swipe to the left on the row for a folder. Swipe all the way to the left, or partially and a Delete button will be shown that you can tap. You'll be asked to confirm before the folder is deleted. NOTE: You can only delete a folder if it's completely empty. The delete will fail and you will be alerted if you try and delete a folder with anything in it.
Move Chart, Weaving Project or Folder	Drag a chart, weaving project or folder to move to another folder (either in the folder list, or the breadcrumb list). You can also drag multiple items at the same time. See Section 7.5 for more details.

7.2 Sorting & Filtering the Library

The Library view can be sorted differently depending on how you are filtering the view. There are three different filters available: "All Items", "Charts", "Weaving Projects". If you are viewing "All Items" you'll see both charts and weaving projects in the list. The number in parenthesis indicates how many items are visible in that folder for that filter. In Figure 16, the current selection indicates we are viewing "All Items" and there are 3 charts in the Library, and 3 weaving projects.

Selecting either “Charts” or “Weaving Projects” will show only those item types, and provide access to more specific sorting options.

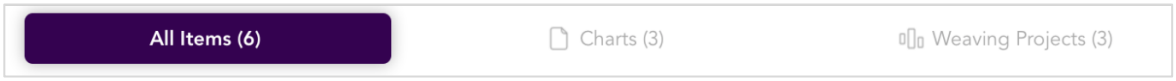


Figure 16: Library filter

The sorting order will apply to all the items in any of the folders in your Library, including when you are viewing search results.

7.2.1 Sorting All Items

When showing All Items (both charts and weaving projects) in the Library, you will be able to sort by name, created date or updated date. Tapping one of the buttons will immediately sort by that field, or if it’s already sorted that way, reverse the sort direction. When sorting by the name field, you’ll be sorting alphabetically A→Z or Z→A. The current sort option and direction is indicated with a single directional arrow rather than the paired up/down arrows. In Figure 17, the view is currently sorted by name with A at the top, and Z at the bottom.

Figure 17: Library sort options for "All Items"

7.2.2 Sorting Charts

When viewing the Library with the Charts filter, you’ll have a few more options for sorting. You can sort by either the width or height of the charts so you can easily find specific chart sizes.

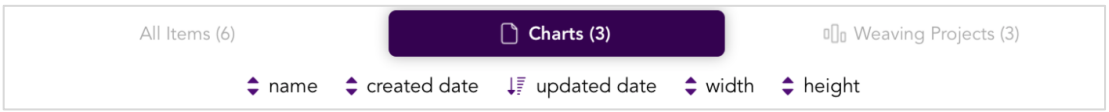


Figure 18: Chart sort options

In Figure 18, we are sorting by the last updated date, with most recently updated charts at the top of the list.

7.2.3 Sorting Weaving Projects

Weaving projects can contain more than one chart in them, so when viewing only Weaving Projects in your library, you’ll have the option to sort by chart count. In Figure 19, we’re sorting with largest number of charts at the top of the list.

Figure 19: Weaving Project sort options

7.3 Search Library

To search your Library, tap the search icon at the top right of the navigation bar. A search bar will be displayed. Any text you type into the search bar will be compared against all the folder and chart names in your library, regardless of which folder they reside in. Results will be displayed in the Library as shown in Figure 20 and the title will change to "Search Results" and the text that matches is highlighted.

While viewing search results, you can change the filter and sort options by tapping on the filters or sort fields above the list in the Library.

Charts and weaving projects that match your search term will be shown with an additional piece of data: the folder they are found in. Folders that match your search term will be shown on the left in the folder list. You can perform any of the standard actions on a chart in search results. Tapping on a folder in the search results will navigate to that folder, and effectively ends the search. You can also tap on the text "In Folder: <folder name>" to navigate to that folder, which again will end the search once the new folder contents are loaded.

To cancel the search, tap the Cancel button to the right of the search bar. This will hide the search bar, and you will be back where you were before beginning the search.

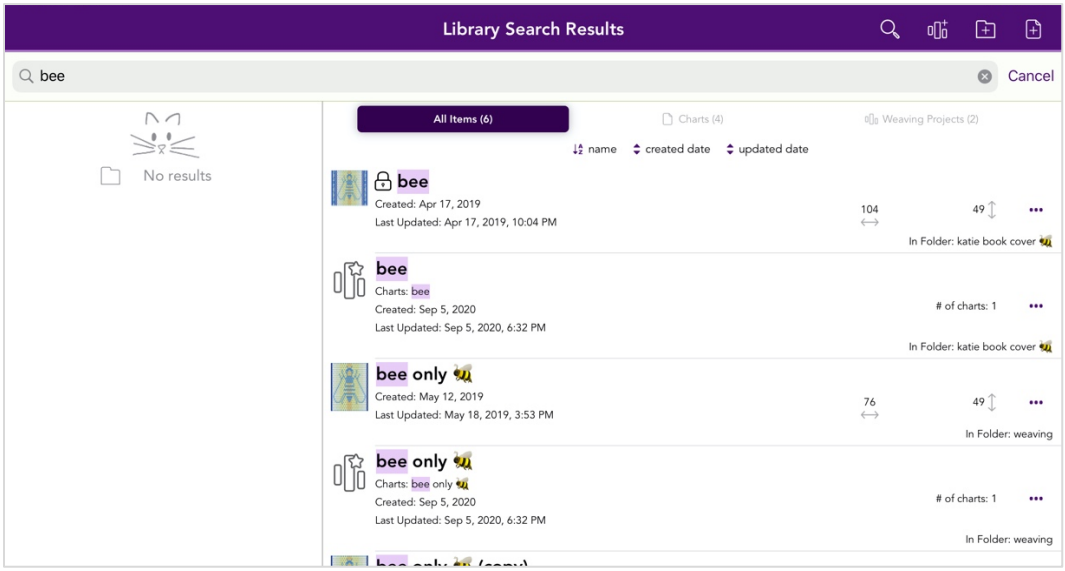


Figure 20: Library search results for the term 'bee'

7.4 More Actions Menu for Charts and Weaving Projects

Each row in the library list has a ••• button on the right-hand side. Tapping that button displays a menu that lists additional actions to perform on that item. The top of the menu will tell you the name of which item you're going to take action on. The small icon at the top will indicate if it's a block chart or an offset oval chart or a weaving project. (See Figure 21 and Figure 22)

The tables following each Figure 21 and Figure 22 provides an overview of the different actions, and where to find more details on how they work.

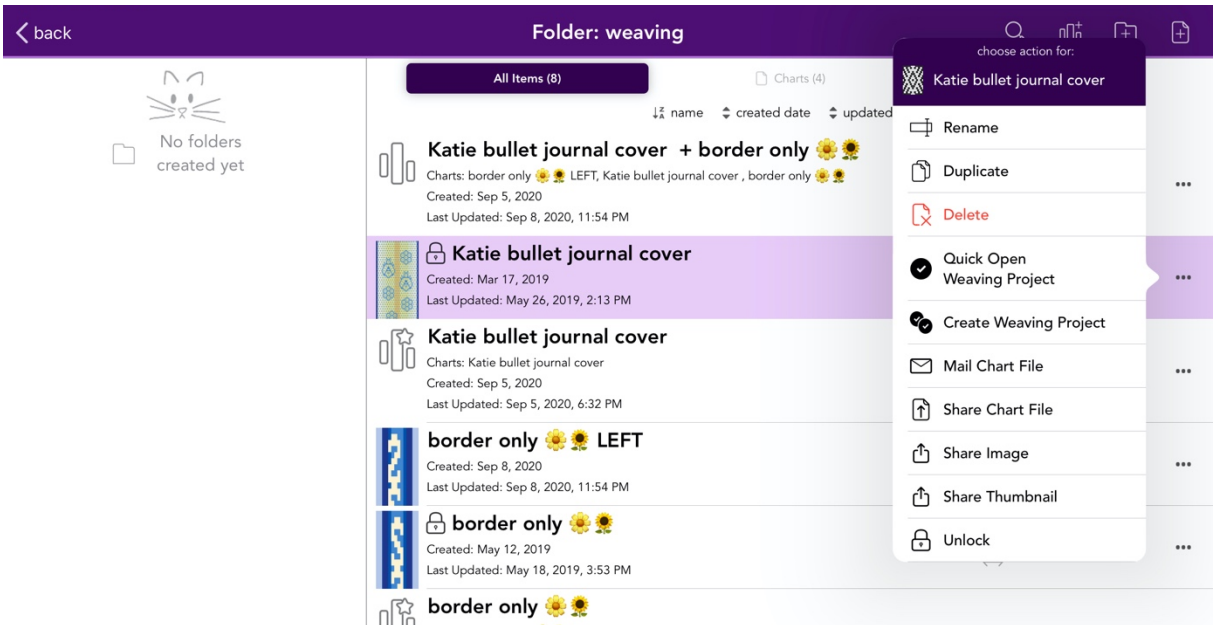


Figure 21: Additional Actions Menu for Chart Library items

Chart Action	What happens?
Rename	Prompts you for a new chart name.
Duplicate	Copies the selected chart to a new chart. You will be prompted to choose a new chart name, or can use a default name which is the selected chart's name with " (copy)" appended.
Delete	Deletes the selected chart. You will be prompted to confirm you want to delete the chart. This cannot be undone.
Quick Create / Open Weaving Project	Will open the Weaving Tracker for this individual chart. If the weaving project doesn't already exist, you'll see "Quick Create Weaving Project", a new weaving project will be created for you then opened. If the weaving project already exists for this individual chart, it will be opened (regardless of which folder it sits in in the Library). See Section 9 for more information using the Weaving Tracker with weaving projects. Weaving Projects created with this method will have a different icon shown in the Library that has a small star on it:
Create Weaving Project	Allows you to create a new weaving project, and will automatically add this chart to the project before allowing you to add additional charts to the project. Once you've selected the charts to go into the project, it will create a weaving project and then open the Weaving Tracker. (Note this option replaces Dual Weave Mode from earlier versions of Warp Visualizer)

	See Section 9.9 for details.
Mail Chart File	Share a Warp Visualizer chart file via email. If the recipient has Warp Visualizer installed, they can load the chart into their own copy of Warp Visualizer. A mail composer window will be presented for you to enter the recipient and make any changes to the email before sending. See Section 10.3 for more details.
Share Chart File	Share a Warp Visualizer chart file through Apple's share mechanism (the share sheet). You can share via Air Drop, save to Files, Google Drive, etc. See Section 10.4 for more details.
Share Image	Export the chart as an image. The standard iOS activity view is displayed and you can save the image to your Camera Roll, Mail it to someone, Message it, Save to Files, etc. See Section 10.1 for more details.
Share Thumbnail	Export the chart as a smaller thumbnail image. There will be no lines between blocks/ovals, no symbol grid drawn, no guidelines. The standard iOS activity view is displayed and you can save the image to your Camera Roll, Mail it to someone, Message it, Save to Files, etc. See Section 10.1 for more details.
Lock / Unlock	Lock or Unlock the chart to disallow or allow changes in the Chart Editor. If a chart is locked and you tap on it to edit it, you will be able to view the chart, zoom in and inspect your chart, but not change any of the block colors, select any blocks, etc.

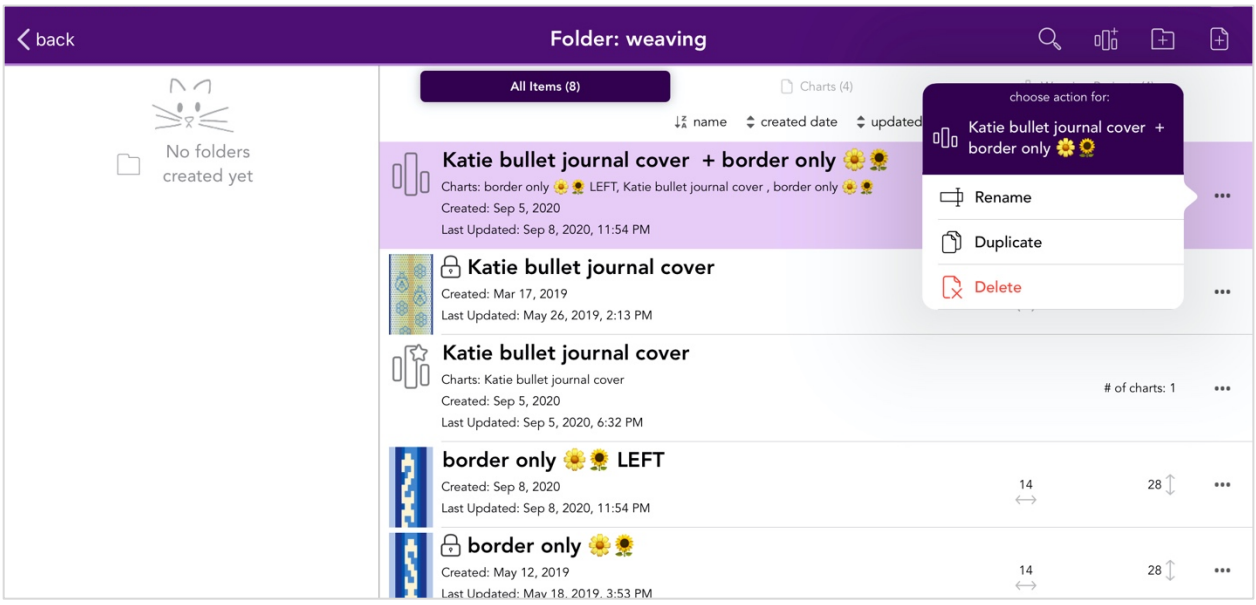


Figure 22: Weaving Project actions menu

	Weaving Project Action	What happens?
	Rename	Prompts you for a new weaving project name. (Note: You can also edit the project name inside the Weaving Tracker)
	Duplicate	Copies the selected project to a new weaving project. You will be prompted to choose a new name, or can use a default name which is the selected project's name with " (copy)" appended.
	Delete	Deletes the selected weaving project. You will be prompted to confirm you want to delete the project. This cannot be undone.

7.5 Moving items into a Folder

In order to keep your Library organized, you can create folders and put charts, weaving projects and other folders inside those folders. Warp Visualizer uses drag & drop actions to move items between folders. To move an item into a folder, follow these steps:

1. Open the Library to the folder that contains the item (chart, weaving project or folder) you want to move
2. Tap and hold the item in the list. The item should appear to "lift" and you can now drag it around (See Figure 24)
3. Drag the item to a folder in the folder list, or a folder in the breadcrumbs at the bottom of the folder list. (The destination folder in both cases will indicate that you can drop the item there by changing appearance).Figure 23: Moving multiple items
4. Lift your finger and the item will move to that folder.
5. To cancel the move, simply drop the items above an invalid target such as the library list or the empty space under your folder list.

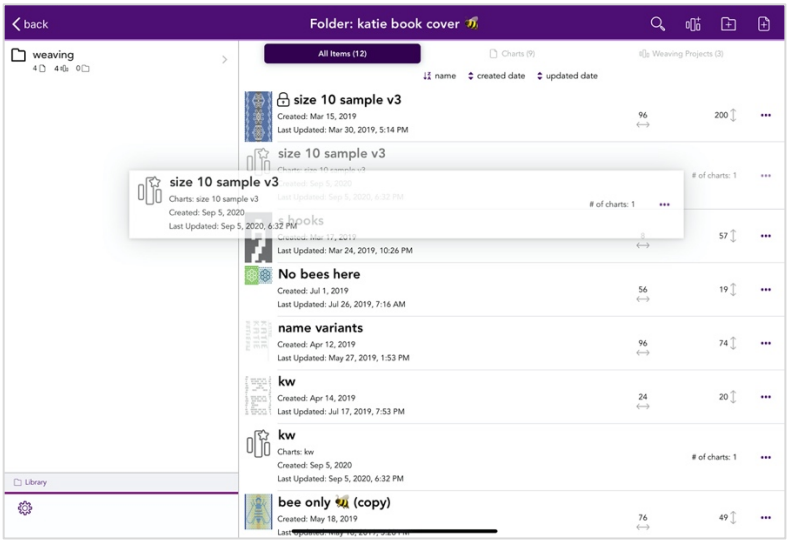


Figure 24: Moving a library item into a folder

Efficiency Tip!

You can move more than one item at a time. After step #2, where you've tapped and can drag around one item, use a second finger to tap on other items. A small stack of items will be shown with a number telling you how many items (See Figure 25 for example).

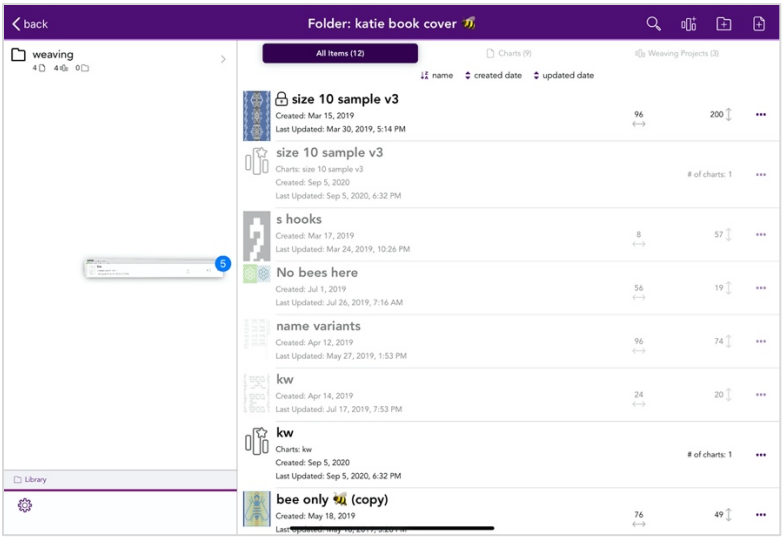


Figure 25: Moving many charts into a folder

If you drag a folder that contains items, the entire folder and all the items inside it will be moved as well.

7.6 Application Info/Settings

Tap on the cog wheel at the bottom left of the folder list to see information about the application (version number, build number, other misc info). See Figure 26. If you tap on the links to the privacy policy or the page to find the User Manual, the links will be opened in a browser on your device.

The following sections provide information about the other options available from this window.

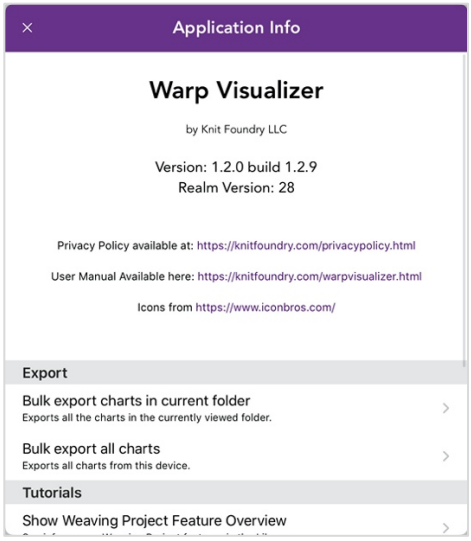


Figure 26: About Warp Visualizer Window

7.6.1 Bulk Export

Bulk Export is for those of you[1] who might want to make a backup of the charts you've created and save them off to a different location such as local device storage (separate from the app), iCloud, Google Drive, Dropbox, or other apps/services that provide similar file storage capabilities. If you only want to share an individual chart, see Section 10.

You can export the charts currently showing in the Library view, or all your charts. Select the appropriate option from the Application info screen, and you'll be prompted with the number of charts to be exported, and asked if you want to proceed. (See Figure 27 for example).

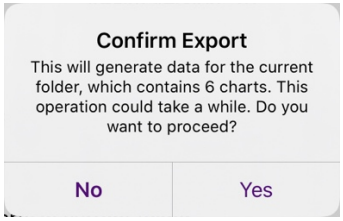


Figure 27: Confirm export before proceeding

Once you've confirmed you want to export, Warp Visualizer will generate the chart files and show you a progress spinner that will count down how many are left to generate, and then prompt you with Apple's share sheet to ask where you want the files to be sent. See Figure 28.

[1] Specifically Tara, who has approx. 200 charts in her library at the time this manual was published ☺

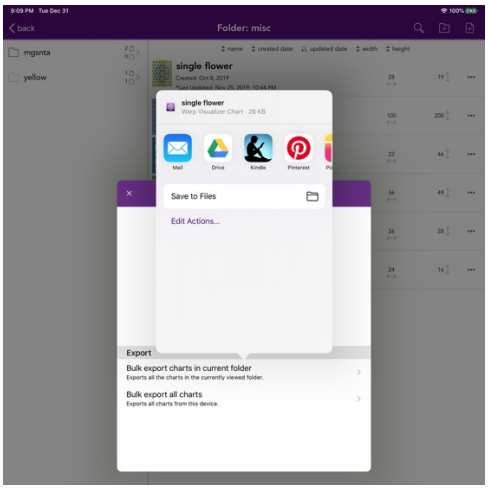


Figure 28: Export prompts you with Apple's share sheet

Note that even though you're exporting multiple files, you'll only see the first one listed in the top left corner of the share popup. If you choose "Save to Files" all of the exported chart files will be saved where you specify in Files.

If you choose to export all charts (and you use folders in your Library), you'll notice the filenames are more than just the chart name. The filename will follow this format:

```
chartname [folder1:subfolder2:subfolder3].wvchart
```

If your chart was named "spider" and resided in a folder called "bugs", you would see the filename

```
spider [bugs].wvchart
```

The filenames are set this way so you are aware of where the chart resided in your Library at time of export. When you import that chart back into Warp Visualizer, it will only use the chart name (which is stored inside the exported file) and will be placed in the root of the Chart Library, just like all other charts you import.

Note: Any forward slashes "/" in chart or folder names will be replaced with plus signs. Some of the services you export to might replace the ":" characters between folder names with forward slashes.

Sharing Limitations

Depending on the version of iOS your device uses, sharing might not allow you to save all the exported files. In testing, we found that sharing multiple charts with Apple's Files app always worked fine; regardless of iOS version. For other services such as Google Drive, iOS 13+ is required to save more than one file to their service. Dropbox seems to not allow saving multiple files at this point even if you have iOS 13, but we hope that changes in the future.

Importing Limitations

Note that when you want to import any charts you have saved using sharing, you can only import one chart at a time into Warp Visualizer.

7.6.2 Tutorials

This section will allow you to reset any tutorials in Warp Visualizers.

7.6.2.1 Show Weaving Project Feature Overview

New with version 1.2 of Warp Visualizer, you'll see a brief tutorial with information about weaving projects when you first run the app. You'll also see a brief overview when you open the Weaving Tracker the first time. Once you've seen the tutorial, it won't be shown to you again unless you select "Show Weaving Project Feature Overview" from within the Application info screen.

7.6.3 Misc

This section will contain some miscellaneous commands. Most likely you won't need any of the commands here.

7.6.3.1 Check Data Integrity

Running this will do a quick check on your data, and fix any errors that are found.

7.6.3.2 Reset Thumbnail Overview Warning

Selecting this means you'll see the Thumbnail Overview warning in the chart Editor when showing a floating thumbnail for the first time. See Section 8.15 for more details about the warning.

7.6.3.3 Regenerate Library Thumbnails

If you've needed to restore your device from a backup, you might not be seeing the correct thumbnails for each chart in your Library - you'll see a generic placeholder instead. You can select this option to regenerate all the thumbnails in your Library. A spinner will be shown on the screen while it's working on the thumbnails. If you have many large charts this action could take a few seconds to complete. This will not update any thumbnails that already exist in order to make it finish quickly.

7.6.3.4 Delete Thumbnails

Selecting this option will delete the local cache of Library thumbnails on your device.

8 CHART EDITOR

When you create a new chart or tap on an existing chart in the Library, you'll end up in the chart editor. This section covers all the tools available in order to design and edit your pattern. Figure 29 shows the general layout of the Editor. This example has the default Dark chart color set to a slightly darker gray (to match the intended warp yarn that would be used to weave the item), and has some custom column colors as well.

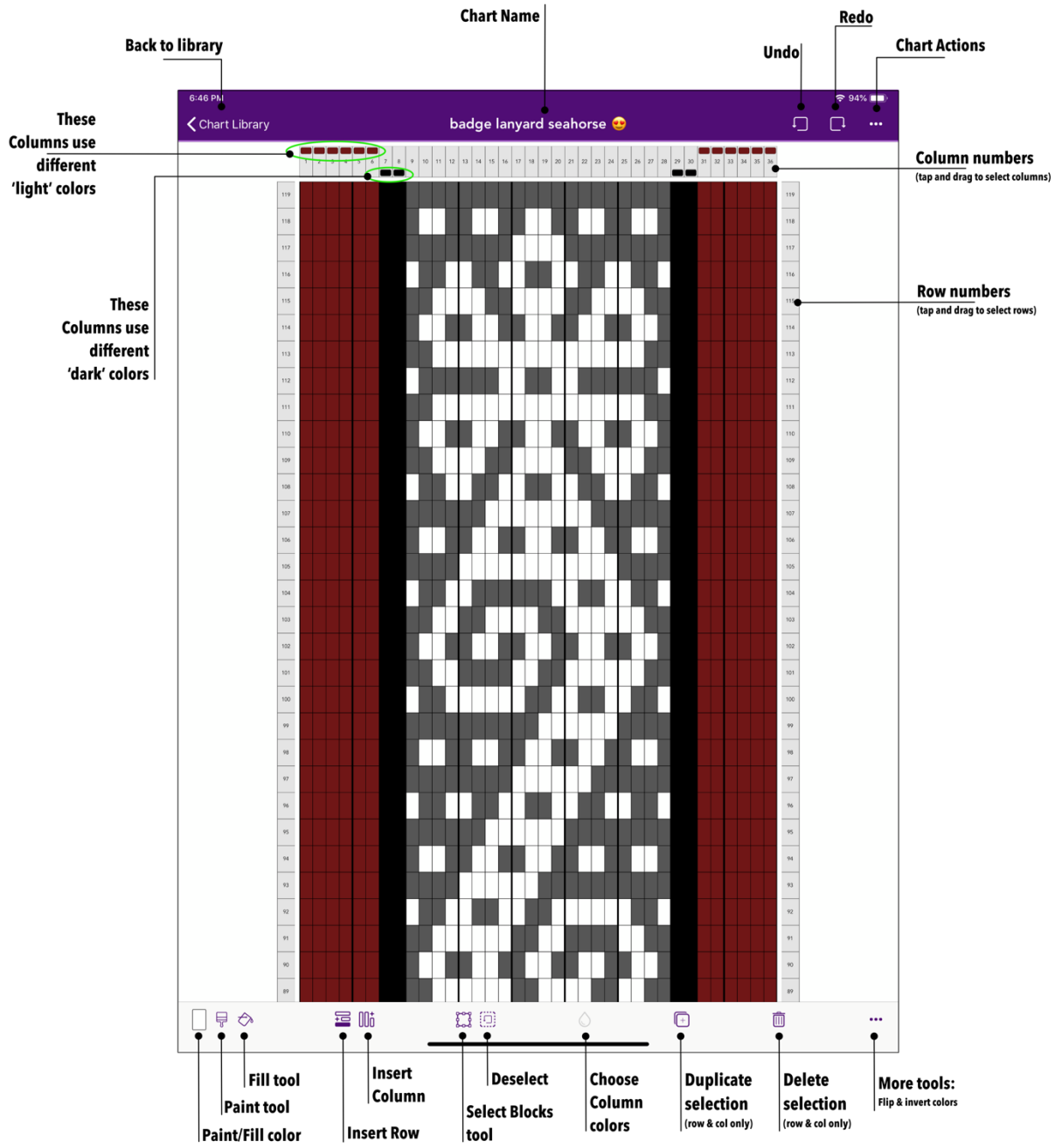


Figure 29: Edit Chart view

All changes made to your chart are saved as soon as you make them, so you can leave the app at any time without worry. When you're done editing your chart, you tap the < arrow to go back to the Library. At that point, the small thumbnail image shown in the Library for that chart will be updated. The row will remain

highlighted purple while the image is being updated. Most times this happens so quickly you won't even notice, but if your chart is exceptionally large, this can take a second or two.

8.1 Change Block Color: Light ⟷ Dark

The simplest way to change the color of a block in the chart is to simply tap it. If the block is Light to start with, it'll change to Dark and vice versa.

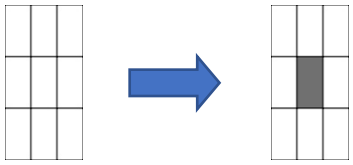


Figure 30: Tapping the middle block to change Light -> Dark

Sometimes there's both a Light and Dark custom color for a column, sometimes only one, and sometimes none! You can tell if a column has a custom color defined by looking at the top or bottom column headers – there will be color swatches drawn with the custom colors when they are defined. You can make some really great effects by varying the colors in each column. Check out Figure 31 for an example where all the Light colors are custom, and the Dark color has been defined to be a darker gray for the whole chart.

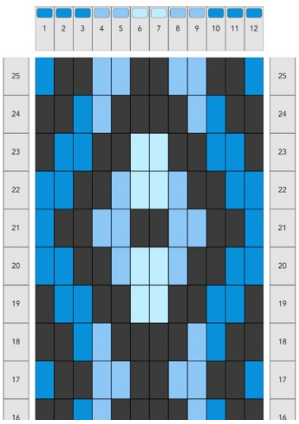


Figure 31: Example of custom column colors.
Only Light values are changed.

Remember!

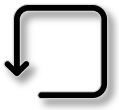
The color drawn for a particular block follow this rule: If there is a custom column color for that block, it will use the custom color, otherwise it uses the chart color.

8.2 Adjusting your view

Warp Visualizer uses standard iOS gestures to adjust your view of the chart:

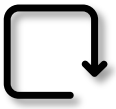
Action	Gesture
Zoom in/out	Pinch outward / Pinch inward
Scrolling or Moving up/down/right/left	Flick in the direction you want to scroll (up/down/right/left) If the chart is narrower than the screen width or shorter than the height, it will stay centered on the screen. When chart is zoomed out far enough and is larger than the screen, you can drag the chart to move it around with one finger or two. Be careful - if you tap and drag on the row or column numbers, you won't end up moving the chart, you'll be creating a selection!
Scroll to the top	Tap briefly in the navigation bar, above the title of the chart.

8.3 Undo



Because you should be able to experiment when editing your chart, we've implemented an undo function. The Undo button is in the navigation bar on the right side. It will only be enabled when you've performed an action that can be undone. Most anything you do in the editor falls into this category. Some examples of un-doable actions: tapping a block to change the color, editing chart options, deleting rows or columns, painting using the Paint tool, etc.

8.4 Redo



The Redo button is just to the right of Undo. If you've clicked Undo, you'll see that the Redo button is now enabled. Tapping it will Redo the last action reverted with Undo.

There's a limit on the number of actions you can undo/redo. That limit is currently set to 30. If you perform 31 actions, you won't be able to go back and undo the very first action you performed. Also, if you leave the chart editor, it wipes out your undo stack and you'll start over from scratch when you re-enter the editor.

8.5 Selecting Rows

To select rows in your chart, simply tap and drag on the row numbers on the right or left of the chart. The rows will be highlighted with red shading.

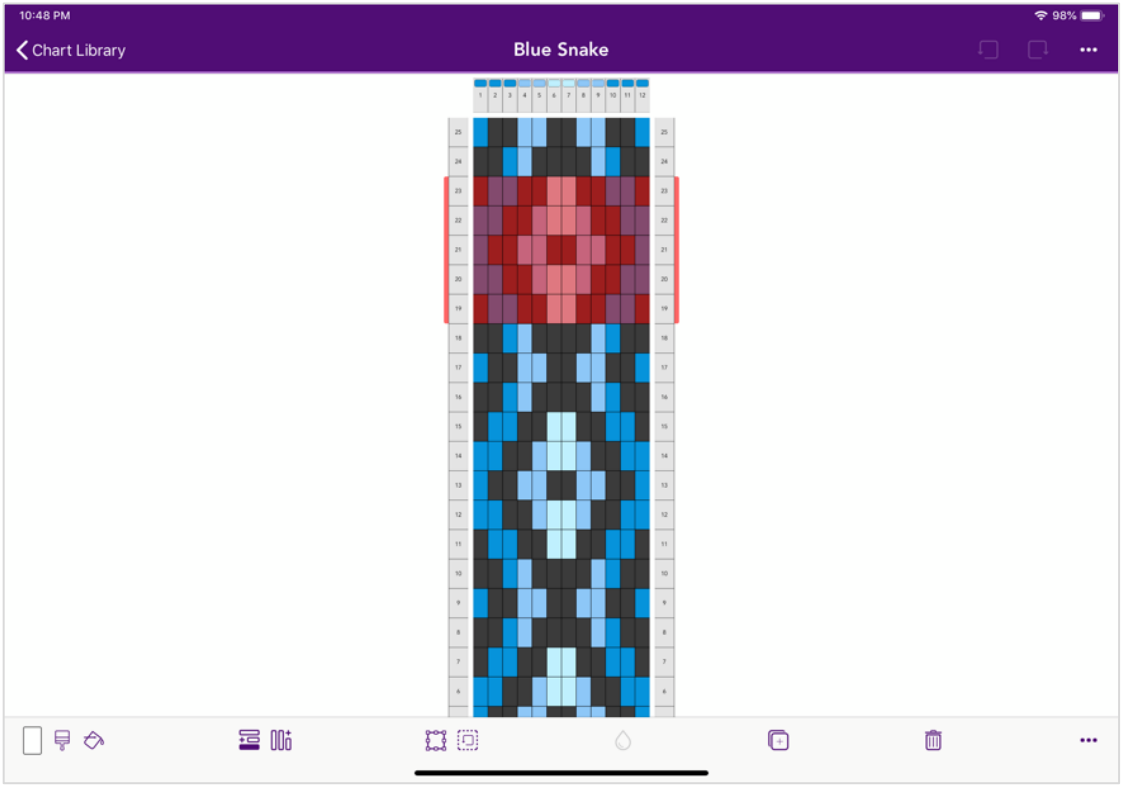


Figure 32: Row Selection example

All rows in the selection must be contiguous, and as you drag up and down, the selection will be extended automatically. Once you have a row selection, several of the buttons in the toolbar will be enabled. You can then delete the selection or duplicate it, among many other options. (See the Tools selection below for details on available tools)

8.6 Selecting Columns

Selecting columns is similar to selecting rows – simply tap and drag on the column header at the top or bottom of the chart. The selected columns will be highlighted with red shading, and the toolbar will change to reflect new options.

Just like row selections, you can only select a contiguous set of columns.

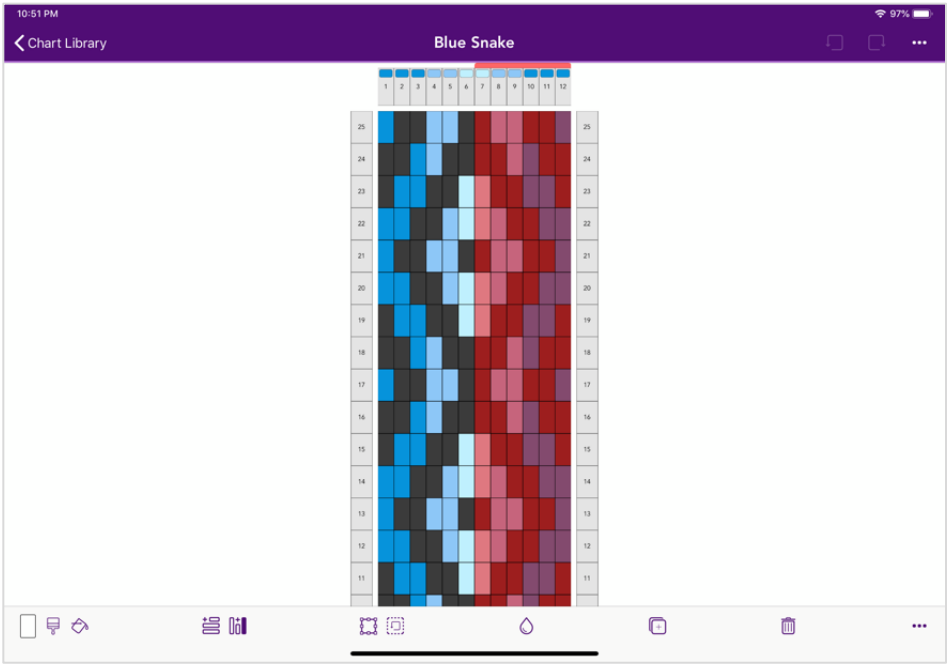


Figure 33: Column selection example

8.7 Selecting Blocks

To select a set of blocks inside your chart, first tap the Block Selection mode button to enable it. Now you can tap and drag to select a set of blocks. A red rectangle is drawn so you'll know which blocks will be included in your selection. Block selection mode will automatically turn off once you've completed a selection.

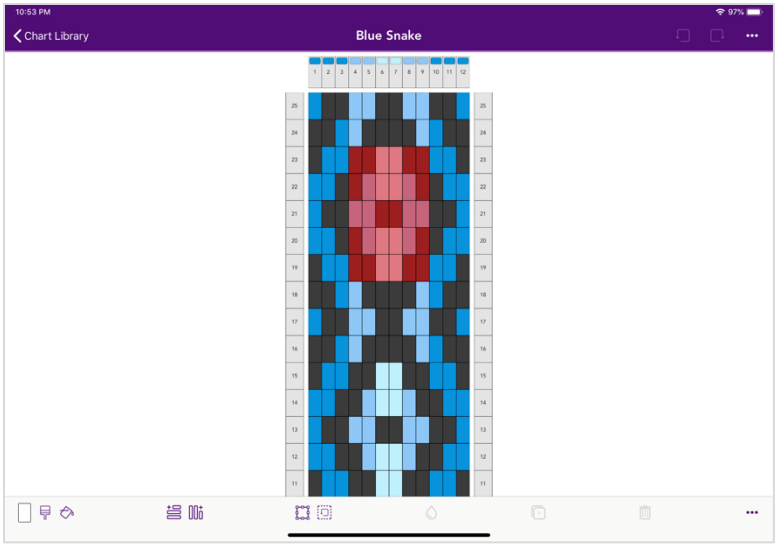


Figure 34: Block selection example

A block selection can be created that mimics a row selection or a column selection if your chart is small enough and you select full rows or columns inside the red selection rectangle. You won't see the selection indicators on the headers though, and the options available in the toolbar will be those available for a block selection, not a row or column selection.

8.8 Canceling a selection

You can cancel any type of selection by tapping the white background outside the chart area, or by using the Unselect toolbar button.

8.9 Moving a selection (Row & Column)

Once you've selected rows or columns, you can move that selection by long tapping (tap finger down and then hold it there) in the selected area for a few moments, and then dragging the selection to a new location. Once you've held down on the selection after a few moments, an indicator will show you where the selection will be moved as you drag it. Once it's in the right location, lift your finger and the selection will be moved.

Note: If you drop the selection on a destination within itself, nothing will happen as you haven't given it a new location to land.

Auto-scrolling while creating & moving a row or column selection: If your chart is zoomed in so part of the chart is not visible, you can hold your finger at the edge of the screen, and it will auto-scroll in that direction.

When
moving columns, any custom colors you've defined in those columns will move with those columns.

8.10 Copying a Block Selection

When you hold and drag a block selection, you're actually copying the contents of the selection to the new location. This lets you use the block selection to "stamp" a motif across your chart in various locations.

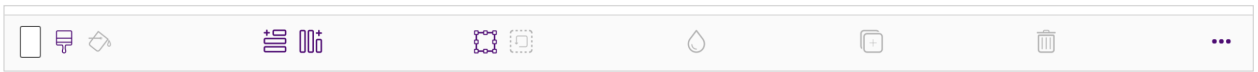
Remember that you're copying Light and Dark blocks, and if you copy the block selection to a different set of columns with different custom colors, those colors will be used to fill the blocks.

8.11 Tools

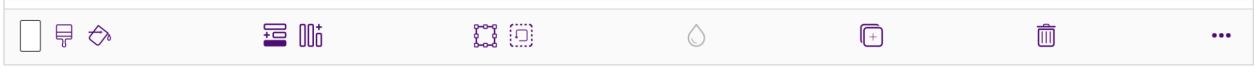
The chart editor has a lot of tools available in the toolbar along the bottom. Using these tools will let you manipulate your chart to create the design you want. Some tools are only enabled when there's a selection on your chart. Figure 29 above shows the location of the tools, and this table lists them as they appear from left to right.

The chart editor toolbar changes based on the type of selection you have. In each of these examples, the Light color is selected as the Painting Color.

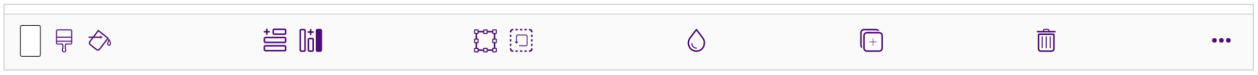
Toolbar with no Selection:



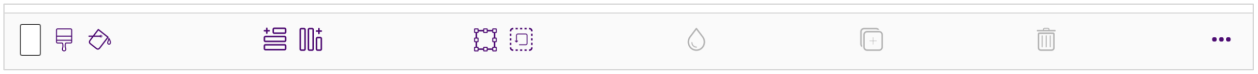
Toolbar with Row Selection:



Toolbar with Column Selection:



Toolbar with Block Selection:



The menu hidden behind the more button on the toolbar is shown in Figure 35 (with a column selection active).

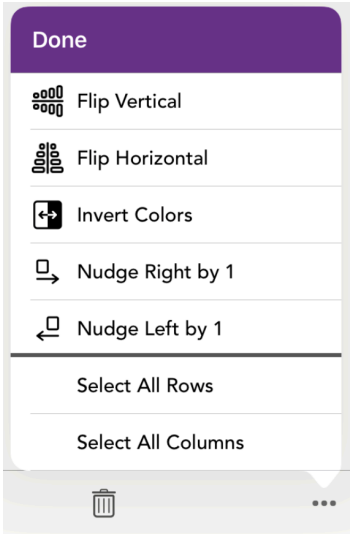


Figure 35: Additional Tools popup menu

The following table provides an overview of each of the tools:

Editor Tool	What happens?
Painting Color	This button shows the current painting color used by the Paint Brush, Fill and Insert Row/Column tools. Tapping this button will switch between the chart's Light and Dark colors (as defined in Chart Options). The Paint Brush tool icon will change to show if you've selected the Light color or Dark color
Paint Brush	If you tap the Paint Brush, you'll invoke Paint mode. When Paint mode is active, the icon will turn red with a red rectangle drawn around it. When paint mode is active, if you tap and drag across blocks in the chart, you'll paint them the color shown in the Painting Color swatch. If you drag across a block that is already that color, it won't change. If you need to move the chart while paint mode is enabled, use two fingers to tap and drag the chart. To cancel Paint mode, simply tap on the Paint Brush in the toolbar again.

Editor Tool	What happens?
Fill Selection	When you have a selection active in your chart, you can paint all the blocks in that selection by tapping the Fill Selection tool. It uses the Painting Color to determine if it will use the Light or Dark color.
Insert Row	To add a new row at the top of the chart, tap the Insert Row button. The Painting Color swatch will determine what type of color is inserted (Light or Dark).
Insert Row above selection	To insert a new row into your chart at a specific location, select the row directly below where you would like to make the insertion. The Insert Row button will change to indicate a new row will be inserted above the selection. Tapping the button will insert the row. The new row will be inserted using the color determined by the Painting Color (Light or Dark).
Insert Column	To add a new column at the far right of the chart, tap the Insert Column button. The Painting Color swatch will determine what type of color is inserted (Light or Dark).
Insert Column to left of selection	To insert a new column into your chart at a specific location, select the column directly to the right where you would like to make the insertion. The Insert Column button will change to indicate a new column will be inserted to the left of the selection. Tapping this button will insert a new column to the left of the selection, using the Painting Color (Light or Dark).
Block Selection mode	Turns on Block Selection mode. The icon will turn red and have a red rectangle around it, indicating the mode is active. You can cancel Block Selection mode by tapping the button again. See the Selecting Blocks section 8.7 for more detail on how to select blocks.
Unselect	Cancels any selection. This button is only available if there's an active selection in the chart.
Set Column Colors	Brings up a form to let you change the column specific colors for the selected columns. Only available when there's a column selection. Using this form will also let you remove column specific colors so the columns will default to the chart Light/Dark colors. See Section 8.12 Column Colors.
Duplicate Selection	Duplicates the selected rows or columns and places it directly to the left of a column selection or directly below a row selection. Only available with a row or column selection.

	Editor Tool	What happens?
	Delete Selection	Deletes the selected rows or columns. Only available with a row or column selection.
•••	More Tools	Tapping this shows a list of additional actions you can take on a selection (See Figure 35). This button is available when there's any type of selection. The popup will stay visible until you tap anywhere outside of it, or tap the Done button in the purple heading of the popover. This allows you to easily perform multiple commands. Note: On narrow devices (like iPhone or when using your iPad with split screen and the app has less width to display itself), the popover will cover the whole app and you'll need to use the Done button to dismiss the list.
	Flip Vertical	[In ••• More Tools list] Will flip the blocks in the selection vertically.
	Flip Horiztonal	[In ••• More Tools list] Will flip the blocks in the selection horizontally.
	Invert Colors	[In ••• More Tools list] Inverts the blocks inside the selection. Any Light blocks will become Dark, and vice versa. To invert colors for the whole chart, simply select all rows (or columns) and then select Invert Colors.
	Nudge Right	[In ••• More Tools list] Shifts the blocks in the selection to the right by one block, wrapping the blocks around so the blocks at the right end of the selection move to the left side of the selection. Only available for Row selections.
	Nudge Left	[In ••• More Tools list] Shifts the blocks in the selection to the left by one block. The blocks on the right side move to the left side. Only available for Row selections.
	Nudge Up	[In ••• More Tools list] Shifts the selected blocks up by one block, wrapping around the top of the selection. Only available for Column selections.
	Nudge Down	[In ••• More Tools list] Shifts the selected blocks down by one block, wrapping around the bottom of the selection. Only available for Column selections.
	Select All Rows	[In ••• More Tools list] Will select all rows in your chart, replacing any existing selection the chart might have.
	Select All Columns	[In ••• More Tools list] Will select all columns in your chart, replacing any existing selection the chart might have.

8.12 Column Colors

When there are columns selected in the chart, you can modify the definition of Light and Dark for those columns to make your design look the way you want (e.g. match the yarn colors to be used in your weaving). Tap on the Column Colors button to show the Column Colors popup. If you've never adjusted the colors in your chart before, you'll see a popup similar to that shown in Figure 36. It shows the default Light color (#FFFFFF = white) and Dark color (#707070 = medium gray). There are no recent colors loaded yet.

Figure 37 shows a Column Colors popup with non-default colors and the chart's colors loaded into the Recent Colors list.

Tapping the "Load Chart Colors" button will put all the colors used in the chart (includes the main chart colors and all the custom column colors) into the Recent Colors lists. This lets you use the colors in different columns in your chart very easily.

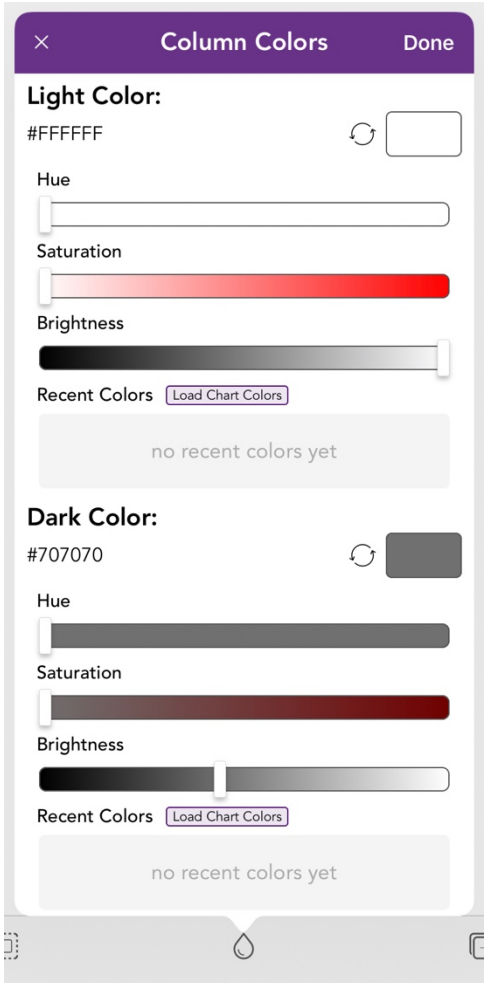


Figure 36: Column Colors Popup with default chart colors

Figure 37 shows the Column Colors popup with important areas labeled.

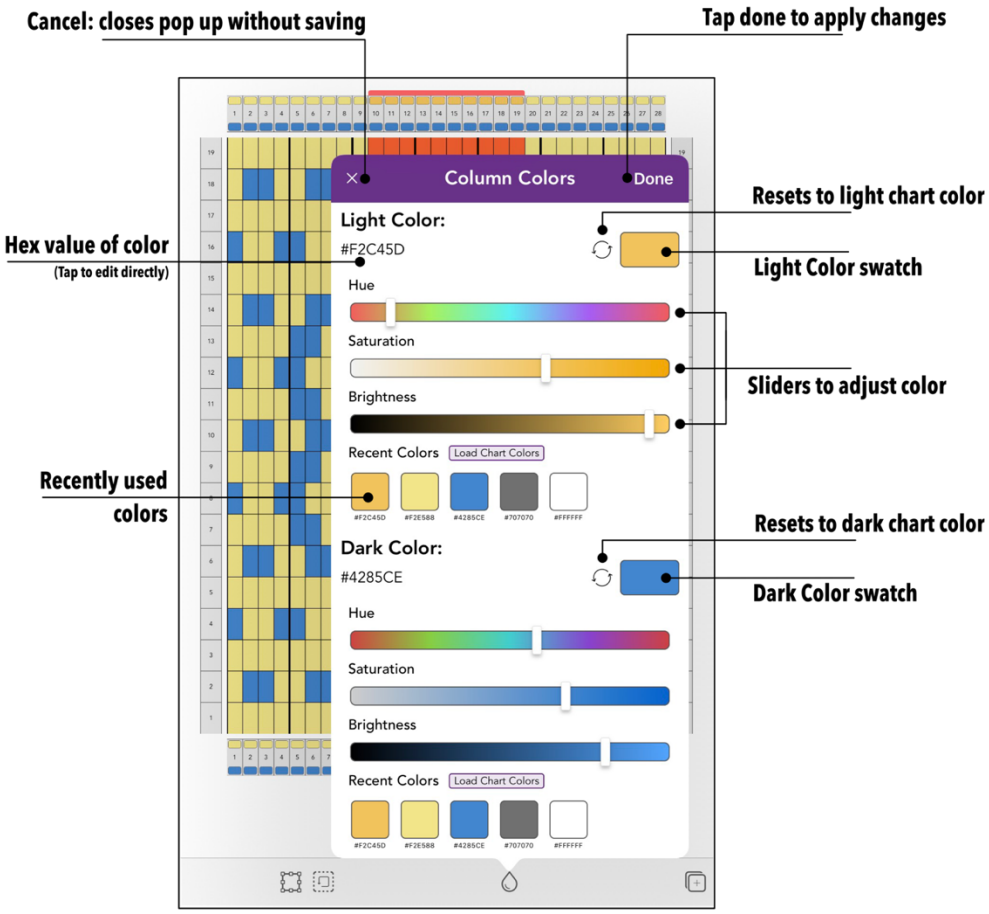
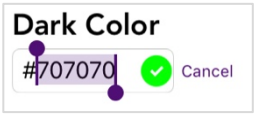


Figure 37: Column Colors with Annotations

The following table explains the different Column Colors actions and what they do:

	Action	Explanation
↻	Reset Color to default	To reset the color back to the chart default, tap the ↻ button. NOTE: In Column Colors, this button resets the column color to match the chart color, in the Chart Options color editor it will reset back to the original chart defaults (#FFFFFF & #707070)
	Change color by entering HEX value	Tap the hex value text and it will change into an editable field. Enter a new value and then tap the green checkmark to commit the change. The sliders and color swatch will adjust to match the new value you've entered once you hit the green checkmark. To cancel any changes you typed into the field, you can tap the "Cancel" button. Note: This field won't let you enter an invalid value, and it should be a 6 digit string consisting of the letters A-F and digits 0-9 and can begin with a # symbol. 

Change color by adjusting sliders	Simply tap and drag the handles on each of the sliders to find the color you're looking for. The swatch color and hex value will update as you drag the sliders.
Change color by selecting a Recent Color	To select a Recent Color, simply tap on one of the recent color swatches. Note this list scrolls right <-> left so there might be more colors hidden to the right.
Load Chart Colors button	Tapping this button will load any colors used in the current chart that aren't already included in the Recent colors list. This loads not just custom column colors, but also the current Light and Dark colors for the whole chart into Recent colors. Recent colors and this button is also available inside the ⚙ Chart Options popup. See Section 0 below for more information on Chart Options.

Colors will be added to the Recent Colors list any time you set new colors, or use the "Load Chart Colors" button. You can also use the recent colors list to copy the colors from one chart to another! If the colors from your chart are already in the list, hitting the "Load…" button again won't have any effect.

Only the 50 most recent colors will be available.

8.13 Chart Actions Menu

When editing a chart, there is a list of actions you can perform on the chart as a whole. These are available when you tap the More button ••• in the upper right of the navigation bar. (This is different than the more button in the toolbar at the bottom of the screen). See Figure 38 for what this looks like, and the table following that describes each of those actions.

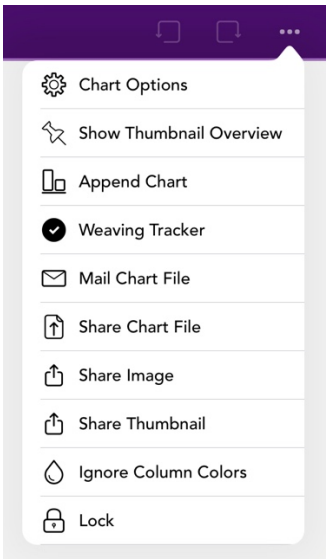


Figure 38: More actions in chart editor

The following table explains what happens for each of the actions in the Chart Actions menu:

Action	What happens?
Chart Options	Pops up a form that lets you edit the following chart options: Name, Light Color, Dark Color, View Guidelines (spacing & thickness) and Row & Column numbering options. See section 0 below for more details.
Show/Hide Thumbnail Overview	Will show (or hide if it's already showing) a Thumbnail overview of your chart floating over the editor window.
Append Chart	Allows you to append another chart to this one. See section 0 below for more details.
Weaving Tracker	Enter the Weaving Tracker view of the chart. This option is also available from the Chart Actions button ••• in the Library. See section 9 for details on how to use it.
Mail Chart File	Share a Warp Visualizer chart file via email. If the recipient has Warp Visualizer installed, they can load the chart into their own copy of Warp Visualizer. A mail composer window will be presented for you to enter the recipient and make any changes to the email before sending. This option is also available from the Chart Actions button ••• in the Library.
Share Chart File	Share a Warp Visualizer chart file through Apple's share mechanism (the share sheet). You can share via Air Drop, save to Files, Google Drive, etc. See Section 10.4 for more details.

Share Image	Export the chart as an image. The standard iOS activity view is displayed and you can save the image to your Camera Roll, email it to someone, Message it, Save to Files, etc. This option is also available from the Chart Actions button ••• in the Library.
Share Thumbnail	Export the chart as a smaller thumbnail image. There will be no lines between blocks/ovals, no symbol grid drawn, no guidelines. The standard iOS activity view is displayed and you can save the image to your Camera Roll, Mail it to someone, Message it, Save to Files, etc. This option is also available from the Chart Actions button ••• in the Library.
Ignore Column Colors **Enable Column Colors**	Selecting Ignore Column Colors will draw your chart only using Chart colors for each block. Any Column Colors you have defined will still remain defined – they just won't be used to draw the chart. To draw the chart using Column Colors, select Enable Column Colors. This setting is persistent and specific to each individual chart. *(Feature added in Version 1.0.1)*
Lock / Unlock	Lock or Unlock the chart to disallow or allow changes in the Chart Editor. A lock icon will appear next to the title of the chart when it's locked (see Figure 39) and the editor won't allow selections, or changes on any of the block colors. Any current selection will be cancelled. A locked chart can still be zoomed in/out, and all Chart Options are available. This option is also available from the Chart Actions button ••• in the Library.

When you lock a chart, there will be a small lock shown in the chart list in the Library. Figure 24 shows an example of that. When you enter the editor with a locked chart, a small lock is added in the title bar (Figure 39) at the top, and you won't be able to create selections or change any blocks Light or Dark settings. Note: When the chart islocked, you can still edit chart options, including changing the definition of the overall Light and Dark colors for the whole chart.

Figure 39: Locked Chart icon in Navigation Bar

8.14 Chart Options

Each chart has a set of options that determine how it's displayed in the editor, Weaving Tracker and when you export it as an image. These options are specific to each chart, so you can customize the settings based on what works best for that chart. Note: There will be fewer options available for an offset/oval chart as there are no guidelines included for that chart type.

Once you make your changes, select the "Save Changes" button at the bottom of the form. No changes are applied until you select "Save Changes". If you need to cancel your changes, tap the 'x' button at the top left.

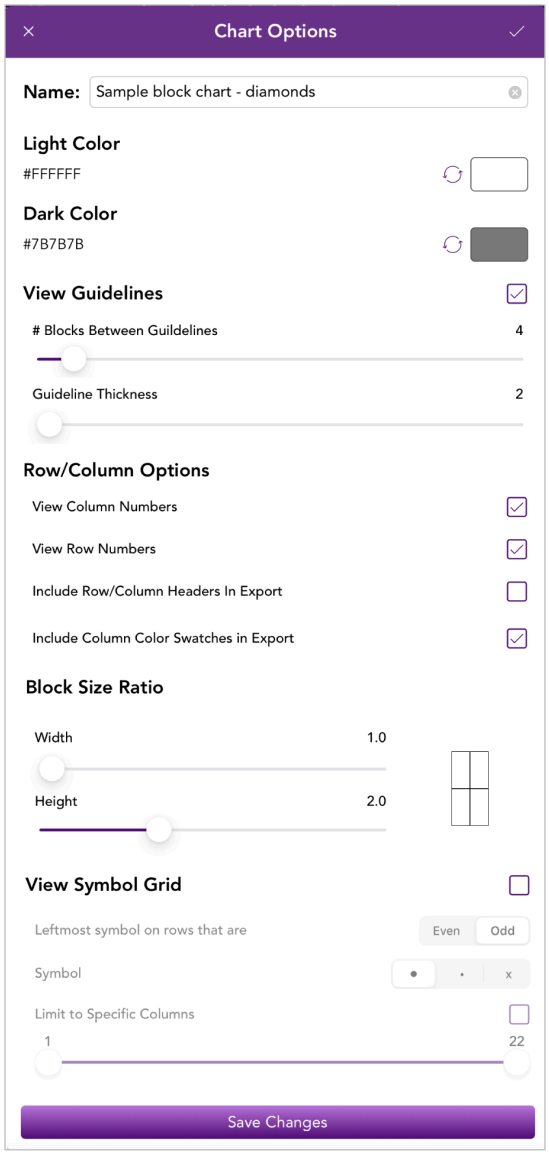


Figure 40: Chart Options in the Chart Editor (block charts)

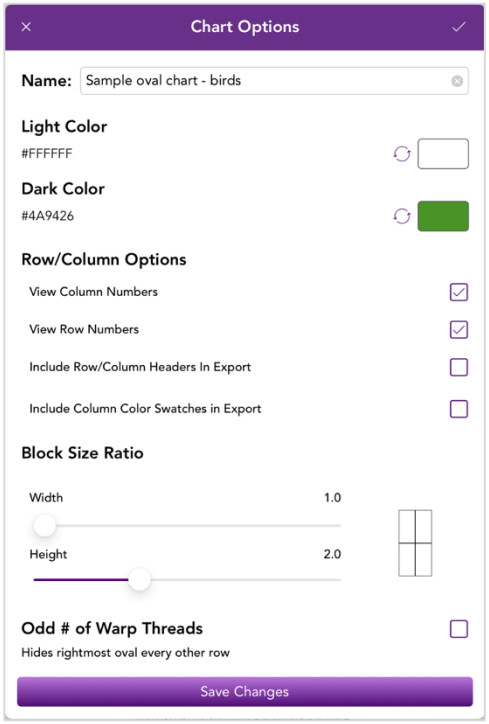


Figure 41: Chart Options for an Offset (Oval) chart

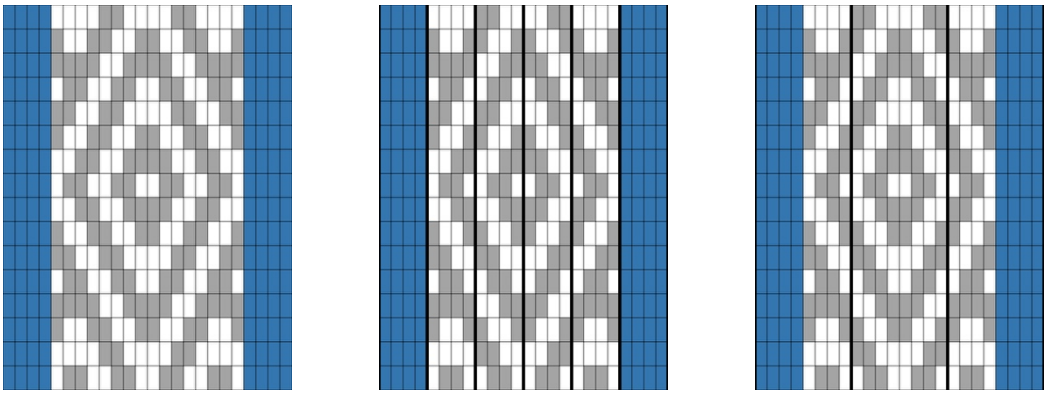
This table covers the chart options:

Option	Definition
Name	The name of the chart. Alpha numeric, emojis, etc. A chart isn't required to have a unique name so it is possible to have two or more charts with the identical names.
Light Color	The color to use for any Light blocks in the chart that don't have a Light column specific color defined. You can edit the hex value directly by tapping on it. You can get access to the HSB sliders and recent colors by tapping on the color swatch. The ↻ button will set the color back to the chart level default (#FFFFFF). See 0 above for more details on using the Color editing panel and recent colors.
Dark Color	The color to use for any Dark blocks in the chart that don't have a Dark column specific color defined. You can edit the hex value directly by tapping on it. You can get access to the HSB sliders and recent colors by tapping on the color swatch. The ↻ button will set the color back to the chart level default (#707070).
View Guidelines	[Block charts only] To help when designing and weaving your chart, Warp Visualizer can add thicker vertical lines into your chart. Unchecking the box

	next to View Guidelines will turn them off in all views (editor, Weaving Track, and if you export an image of the chart).
# Blocks Between Guidelines	[Block charts only] Determines how many blocks are between each vertical guideline. Beta testers found that every 4 blocks was the most useful spacing for the guidelines, so that's the default value. Change the value here to something different based on your preferences. Figure 42 shows examples of different values for the # of blocks.
Guideline Thickness	[Block charts only] Determines how thick the guidelines are drawn. Default value is 2; and can be made thicker depending on your preferences.
View Column Numbers	By default, column numbers are shown across the top and bottom headers of each chart. You can turn the numbers off but not the headers themselves, as they are required to create column selections.
View Row Numbers	By default, row numbers are shown on the left and right headers of each chart. You can turn the numbers off using this option.
Include Row/Column Headers in Export	When you export your chart as an image, you can determine if you want to include the row and column headers as part of the image. This option is turned off by default.
Include Column Color Swatches in Export	If this is selected (and you are also including Row/Column headers in your export) you will see any of the custom column color swatches in the export, just like you do in the editor.
Block Size Ratio width & height	Using the width and height sliders, you can change the size of the blocks in your chart. The small sample chart to the right of the sliders will be updated to show the ratio as you change the width and height values.
View Symbol Grid	[Block charts only] If you check this option, a grid of symbols will be added to your chart. The grid is a checkerboard of symbols, where they alternate each block in alternate rows.
Symbol Grid: Leftmost symbol on rows that are	[Block charts only] Determines if the leftmost symbol is on even or odd rows.
Symbol Grid: Limit to Specific Columns	[Block charts only] Limits which columns where the symbol grid is drawn.
Odd # of Warp Threads	[Oval charts only] Will hide the right most ovals in the chart.

8.14.1 Guidelines

Guidelines only apply to block charts, so you won't see those options for a Offset (Oval) chart. Guidelines make it easier to line up design elements across the length of a band, and with knowing how many threads to pick up when weaving. Figure 42 shows one chart with a few different options.



Guidelines turned off | Guidelines every 4 blocks | Guidelines every 8 blocks

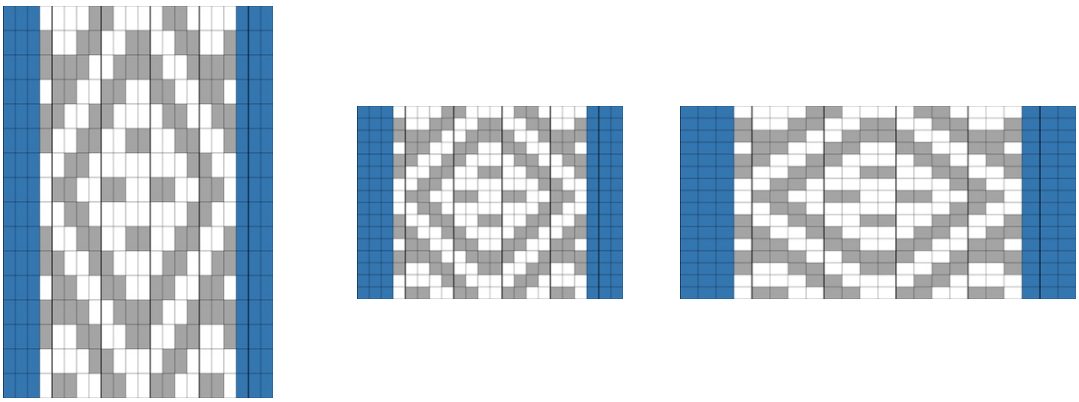
Figure 42: Guideline spacing examples

8.14.2 Block Ratios

For both block and oval charts, you can change the ratio of height to width to get a different size block. The default ratio of 1 unit wide by 2 units high is usually good at representing what the finished weaving will look like. Depending on the style of weaving, how much tension your warp is under and personal preference you might want to use a different ratio for your chart.

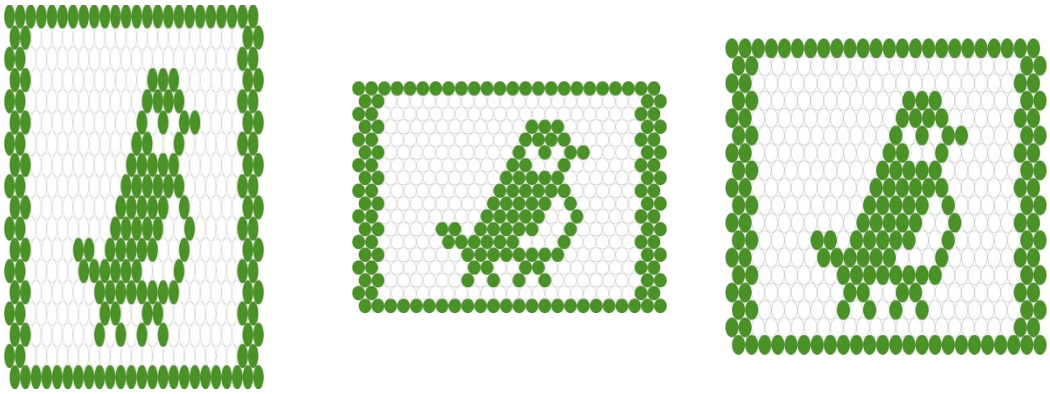
Just like all of the Chart Options, you can easily use the Undo button to revert the changes back to what they were before you changed it. Play around with various ratios and see what you like best for your chart.

Figure 43 and Figure 44 shows you various ratios on the same chart for blocks and ovals.



width = 1, height = 2 (default) | width = 1, height = 1 | Width = 1.5, height = 1.0

Figure 43: Various block ratios on the same block chart



width = 1, height = 2 (default) | width = 1, height = 1 | Width = 3, height = 4

Figure 44: Various ratios on the same oval chart

8.14.3 Symbol Grid

Some styles of weaving, such as Baltic pickup, utilize a grid of symbols on the chart to help you know where the pattern threads are for each pick. You can add a symbol grid to your block charts using the View Symbol Grid options in the Chart Options dialog - see Figure 45.

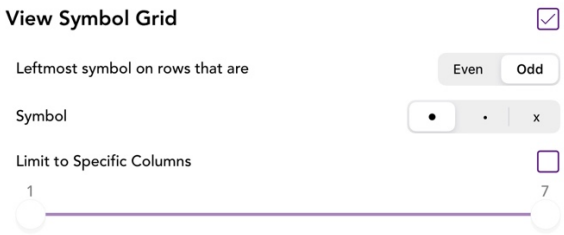


Figure 45: Symbol Grid options

By default, the Symbol Grid won't be enabled. You'll need to check the box to the right of the **View Symbol Grid** heading to turn it on. Save your changes in the chart options and you'll see dots showing up on every other block in your chart. The defaults are starting on an odd row, with the larger circle, and allowing the grid across all columns. See Figure 46. The row numbers are still included in this image so you can easily see that the leftmost symbol is on odd numbered rows (row 1, 3, 5, etc..).

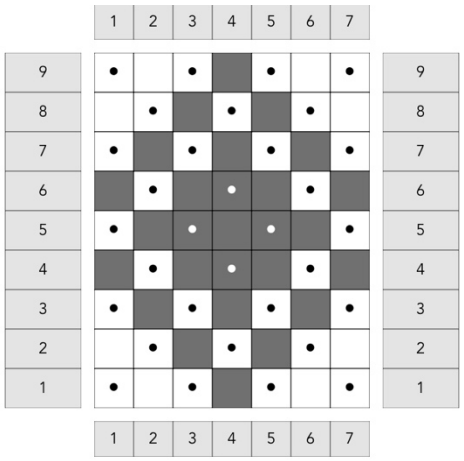


Figure 46: Symbol grid with default setting "odd"

To have the left most symbol on even rows, switch the selection to "even". See Figure 47, which is actually where the symbols should be to make the best use of our pattern threads in this particular motif. For comparison, I've included the woven band next to the chart where the pattern threads in the band are bright blue.

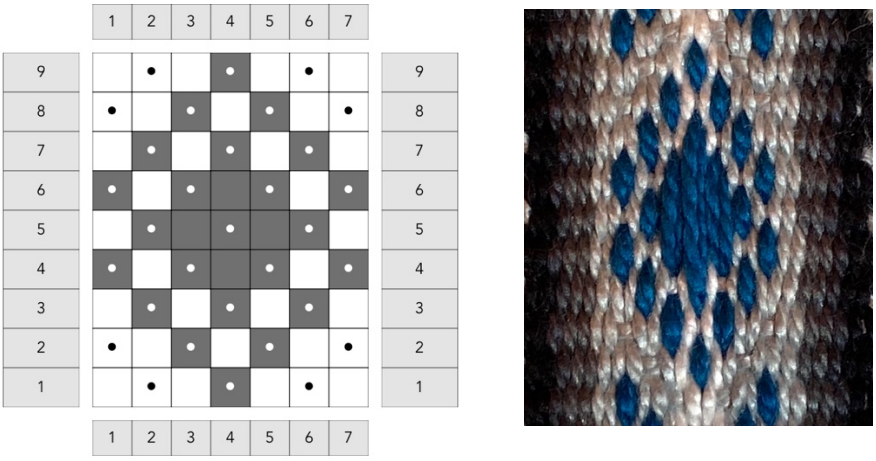


Figure 47: Symbol Grid using "even" setting

You'll note that the symbol is drawn in a contrasting color to the background. Warp Visualizer will calculate which is best to display, a black or white symbol depending on what color is in the block.

You can choose between three different symbols for your Symbol Grid: a dot, a lighter dot, and an x. All the symbols in the grid will be the same.

The last option allows you to only include the Symbol Grid on a subset of columns. Often, I like to include the border threads in my chart, and only want the symbol grid on the center motif. Check the box next to "Limit to Specific Columns" to enable this, and then use the slider underneath to specify the start and end column numbers of the grid. If Limit to Specific Columns isn't checked, the grid will be drawn on your whole chart. The screenshot in Figure 45 shows that the grid will cover columns 1 through 7; which matches our chart in Figure 46 and Figure 47. Figure 48 shows an example where the symbol grid is limited to columns 2 through 6.

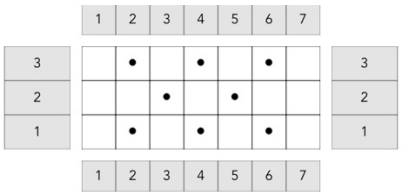


Figure 48: View Symbol Grid with limited columns

8.14.4 Odd # of Warp Threads

There are times when you won't always have full sets of pairs, and you might have an extra thread at the end. Often Inkle weaving warp setups will have an extra thread on one side. When you select that you have an Odd # of Warp Threads, your chart's rightmost oval will be hidden. See Figure 49 for an example. If you look at the Odd rows, you'll see that those rows are 1 oval shorter than the even number of rows.

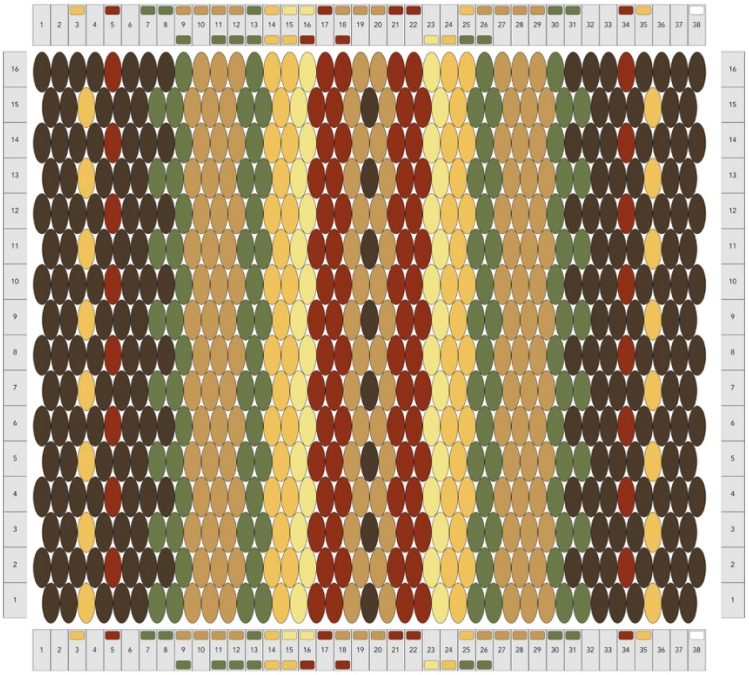


Figure 49: Chart with Odd # of Warp Threads selected

One thing to note about this option. The ovals are still there, just hidden. As you add and remove rows from your chart, and a row changes from odd to even, you'll see that extra oval show up. When a row changes from even to odd numbered, it will disappear and be hidden. It will remember if it was painted a light or dark color as well.

8.15 Show Thumbnail Overview

Often when working on a large chart, it's useful to see a high-level view of the chart to identify areas where it's not symmetrical, or maybe you just want to enjoy how beautiful it looks. ☺

To display the thumbnail, simply select Show Thumbnail Overview from the More button ••• menu. By default, the thumbnail will be shown in the lower right corner of the window. See Figure 50 for an example. If you'd like to move the thumbnail, simply drag it to a different corner of the screen. As long as you get the chart mostly in a corner, it will automatically finish moving into that corner when you let it go. If you

rotate your device, the thumbnail will rotate as well. The size of the thumbnail might change during rotation as there might be a bit more space for a thumbnail to be shown in portrait vs landscape mode.

Warp Visualizer will remember where you place the thumbnail for each chart so even if you leave the editor or hide the thumbnail, it will show again in that same location until you move it to a different corner. If the Thumbnail is showing when you leave the editor, it will be automatically shown again the next time you edit that same chart.

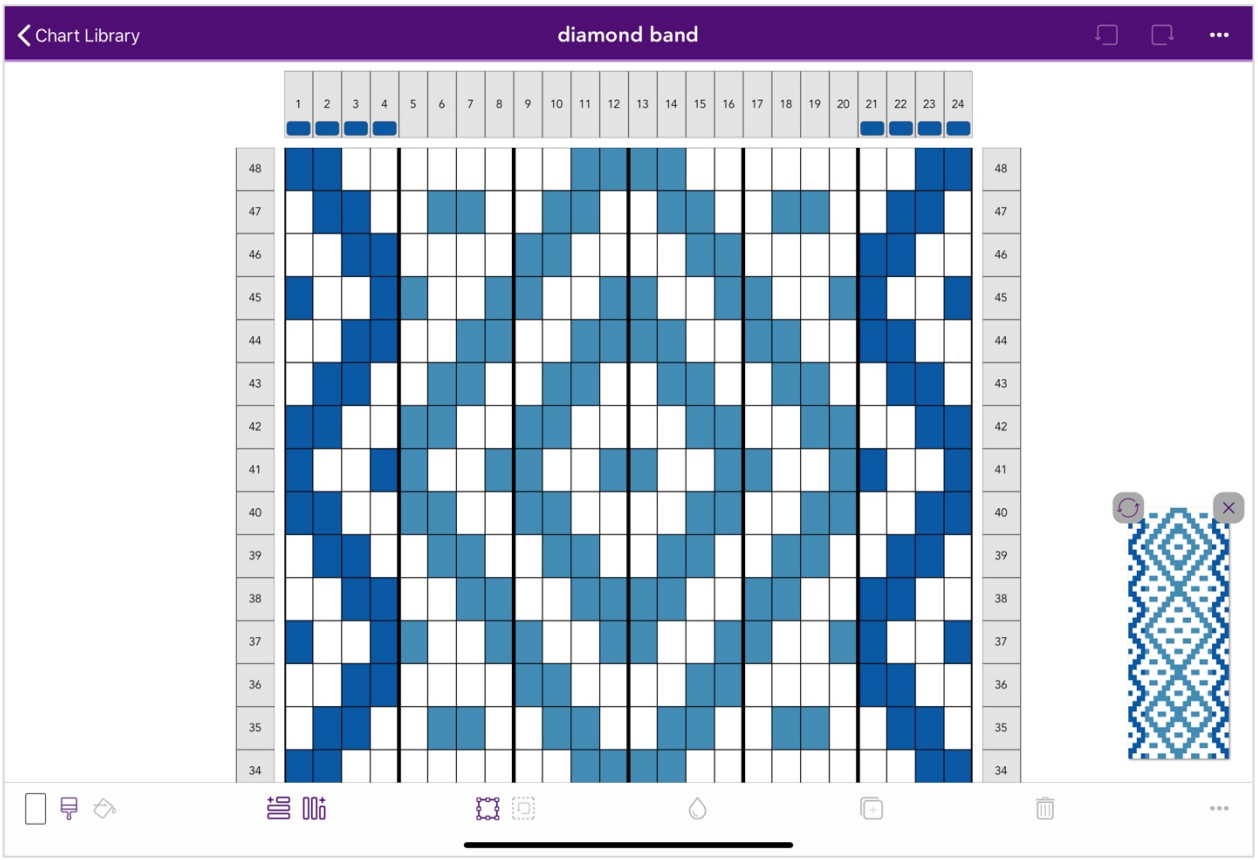


Figure 50: Thumbnail Overview in the Chart Editor

You can close the thumbnail by either tapping the small x in the upper right corner of the thumbnail, or select Hide Thumbnail Overview from the More button ••• menu.

The thumbnail is an exact representation of your chart at the time it's first shown. If you make a change to your chart, the thumbnail will be out of date[2] and the border of the thumbnail will turn red as an indicator.

[2] Keeping the thumbnail up to date real time as you make edits to your chart would slow the app down way too much unfortunately.

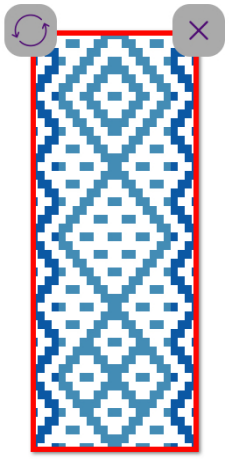


Figure 51: Thumbnail that is no longer in sync with chart

After making some edits, you can tap the refresh button to update the thumbnail. To remind you about what the red border means, you'll see the alert shown in Figure 52 the first time you show a Thumbnail Overview for an editing session. If you really don't want to see this warning ever again, select "Don't show this warning again (ever)" and you'll not see it again even when editing other charts.

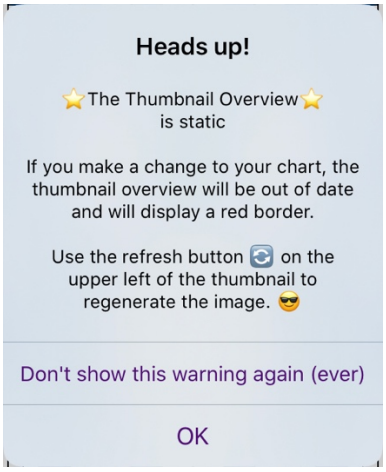


Figure 52: Thumbnail overview alert

8.16 Append Chart

Using Warp Visualizer to store individual motifs lets you easily combine them into new designs using the **Append Chart** action in the chart editor. You might be creating a band that includes several different motifs along it's length. Append lets you pull those motifs into a single chart easily.

The Append Chart view starts out with the current chart shown in the preview area on the left by itself. On the right side of the screen is a Library browser with charts at the top and folders at the bottom of the list. You can navigate your Library by tapping on folders to drill down, use the back arrow < to navigate to a parent folder, or use the search field to find a chart or folder with a specific name.

Only charts that match the type of chart you started from will be shown in the Library browser on the Append chart view. For example - if you are appending to a chart with offset ovals, you'll only see that type listed on the right.

Once you select a chart in the list, it will be shown in the preview section on the left. The toolbar provides options to change the arrangement of the two charts. As you adjust settings using the toolbar actions, you'll see the preview on the left side of the screen update to reflect your choices. If you don't like the chart you selected, simply select a new one.

When your two charts are arranged as desired, tap the Done button in the upper right of the navigation bar to actually append the new chart. You'll be taken back to the editor screen and shown the updated chart. Note: No changes are made to the second chart, only the first chart. If you decide you're not ready to append another chart, you can use the Cancel button in the upper left, and you'll be taken back to the chart editor with no changes made.

NOTE: Once back in the chart editor, you can undo the append action, and your chart will be put back the way it was before the append was performed.

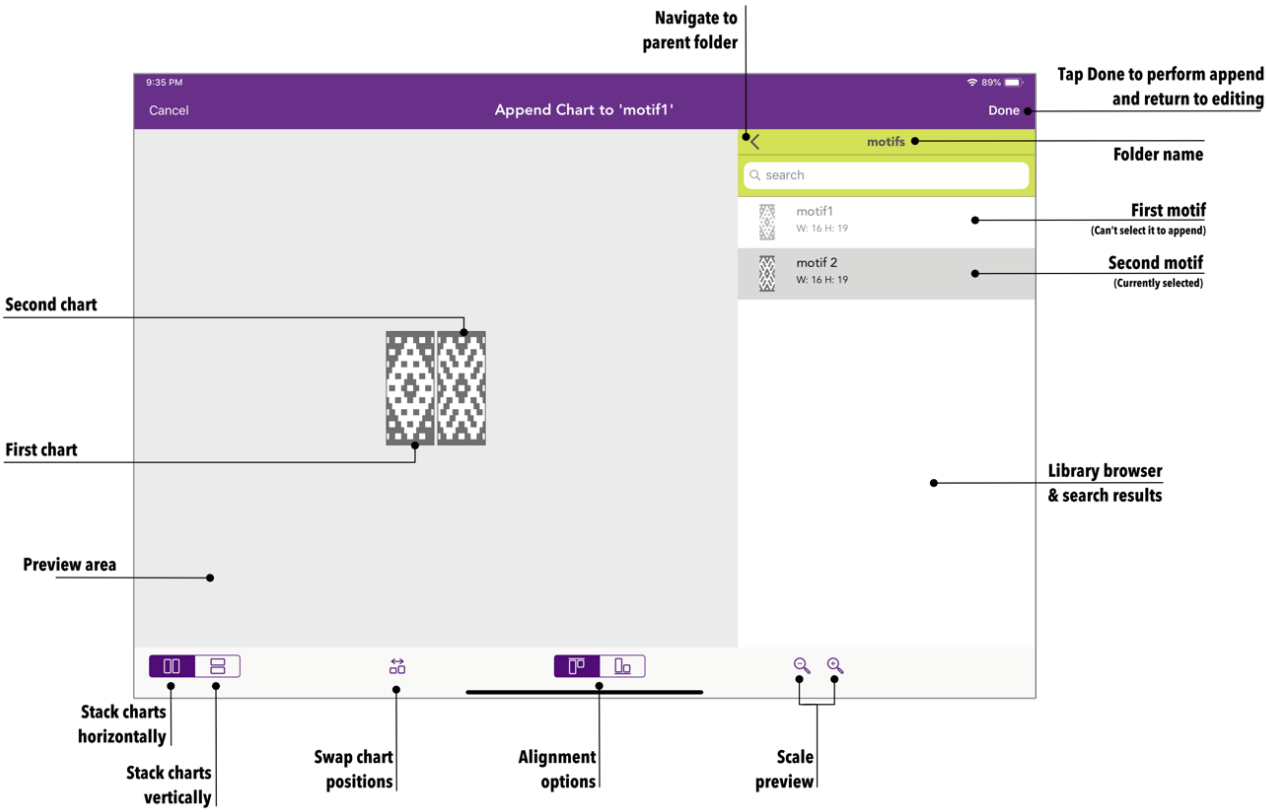


Figure 53: Append Chart

8.16.1 Append Examples

Let's walk through an example: In Figure 53, we started with a simple diamond motif in the default chart colors. In the same folder (named 'motifs'), we see there's a second chart available ('motif 2'). Tapping on 'motif 2' adds it to the preview area. Now you can start adjusting the position of the second chart in relation to the first. Tap on the Stack charts vertically button to change the stacking order. (result shown in Figure 54). Tap on the Swap position button to place the new chart above the current one, and you'll see the result in Figure 55.

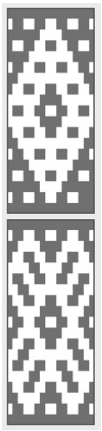


Figure 54: Stacking charts vertically

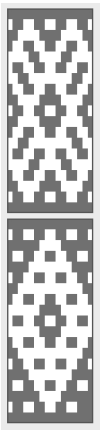


Figure 55: Swapping position of charts

The two charts happen to be the same width across, so the alignment options for vertically stacked charts (and) don't really apply. If one chart was wider than the other, you could use the alignment options to adjust the positions of the two charts.

To see what happens when you have one chart larger than the other, see Figure 56 and Figure 57. In this example, because you're stacking the charts horitzontally, and adding full columns, the column colors for the 2nd chart are copied as well. The empty space under the first chart is filled in using the current Paint Color type (Light / Dark). If you stacked the charts vertically then the second chart's column colors are ignored.

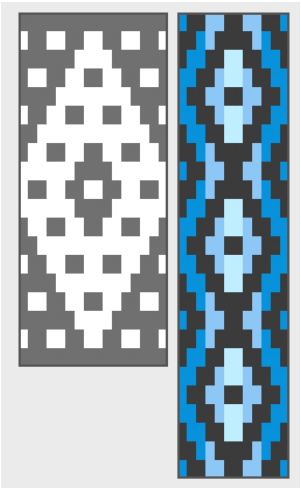


Figure 56: Append tall chart to short chart

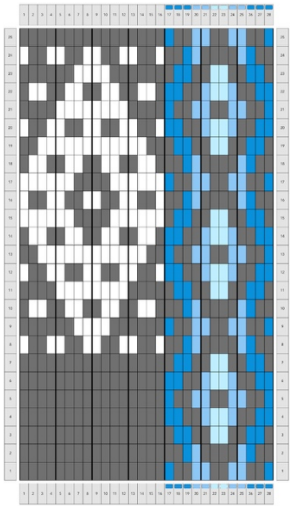


Figure 57: After appending tall chart to short chart

Because you can undo appending a chart, it's easy to try adding a chart, see how it looks and then undo if it wasn't quite what you wanted.

8.16.2 Append Toolbar Options

This table covers all the Append toolbar options and what action they perform:

Button	What happens?
Stack Charts Horizontally	Arrange the second chart horizontally next to the first chart, like books on a shelf.
Stack Charts Vertically	Arrange the second chart vertically above the first chart, like buttons on a shirt.
Swap Chart Positions	Swap the position of the two charts. The button shown changes based on if the charts are stacked horizontally or vertically.
Alignment	When the two charts are not the same exact width, these buttons will adjust how they are aligned against each other. Different alignment buttons are available depending on if the charts are stacked horizontally or vertically. Horizontally stacked charts can be aligned against the top or bottom edges. Vertically stacked charts can be aligned against the left or right edges.
Scale/Magnify preview	To change the size of the preview, use the magnifying glass buttons to make the preview larger or smaller .

9 WEAVING PROJECTS & TRACKER

Once you've finished a design and are ready to weave your project, you can use the Weaving Tracker to keep track of which row you're on, count the number of blocks you need to pick for each color and easily move up to the next row. Even if you close the tracker or the app, Warp Visualizer will remember what row you were on for that weaving project, so you can step away from your weaving easily and not lose your place. You'll see the Weaving Tracker when you open a Weaving Project[3]. Note: After you've started using a chart in a Weaving Project, if you then edit and change the number of rows in that chart, the Weaving Tracker's current row won't be guaranteed to be in the same place.

To see Weaving Projects in your library, you can use the filters in the Library to view *All Items* (both charts and Weaving Projects), or select *Weaving Projects* to view only Weaving Projects. A Weaving Project can have one or more charts in it, letting you easily combine different charts when weaving to create a unique fabric. Projects in the library will be shown with one of the following icons:

Figure 58: Weaving Project library icons

The icon with the star will be used for a weaving project that was created using "Quick Create Weaving Project" from within the library. These projects will only ever have one chart inside of them. If you add additional charts into the project (or change the chart used for the project), the star will be removed from the icon. If you select "Quick Open Weaving Project" from the library for a chart, it'll automatically open the Weaving Project you previously created, even if that project is in a different folder in your library.

9.1 Creating a Weaving Project

If you know you're only going to be weaving one chart, the quickest way to create a weaving project is to choose "Quick Create Weaving Project" from the chart actions menu ••• in the Library. Then you'll go straight into the Weaving Tracker (see Figure 61) for that chart. Later you can add other charts to that project if you want to. When you go back to the Library from the Weaving Tracker, you'll see your new project in the list with the same name as the chart.

If you'd like to start a project and include more than one chart right away, you should use the Create Weaving Project button in the upper right of the main Library, or Create Weaving Project for a specific chart in the actions menu ••• for that chart. You'll be shown the Weaving Project Setup dialog (Figure 59), and on top of that a popup that lets you select charts to include in your project. See Figure 59 for what this looks like. You can select one or more charts, and then chose the "Select" button. If the chart you want is in a different folder, scroll down in the list to find the folders at the bottom and navigate that way. Note: If you want to add charts from different folders into your project, you'll need to select the chart(s) in one folder first, choose "Select" button, and then reopen the Add chart popup by choosing the "+" button, and find the next chart(s) to add.

[3] Weaving Projects were introduced in Warp Visualizer 1.2

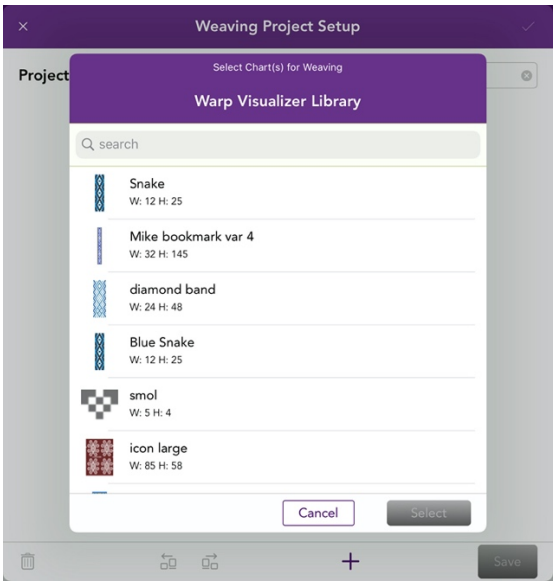


Figure 59: Weaving Project Setup with Add Chart popup

Once you have selected a chart or charts and tapped "Select" in the Select Chart popup, you'll see a thumbnail of each chart in the Weaving Project setup dialog. (See Figure 60) Now you can arrange the order of charts by selecting a chart, then tapping the Move Left or Move Right button. A red border on the thumbnail will show you which chart is selected. Simply tap a thumbnail to select a different chart. You can also remove a chart from the project by tapping the Trash Can button.

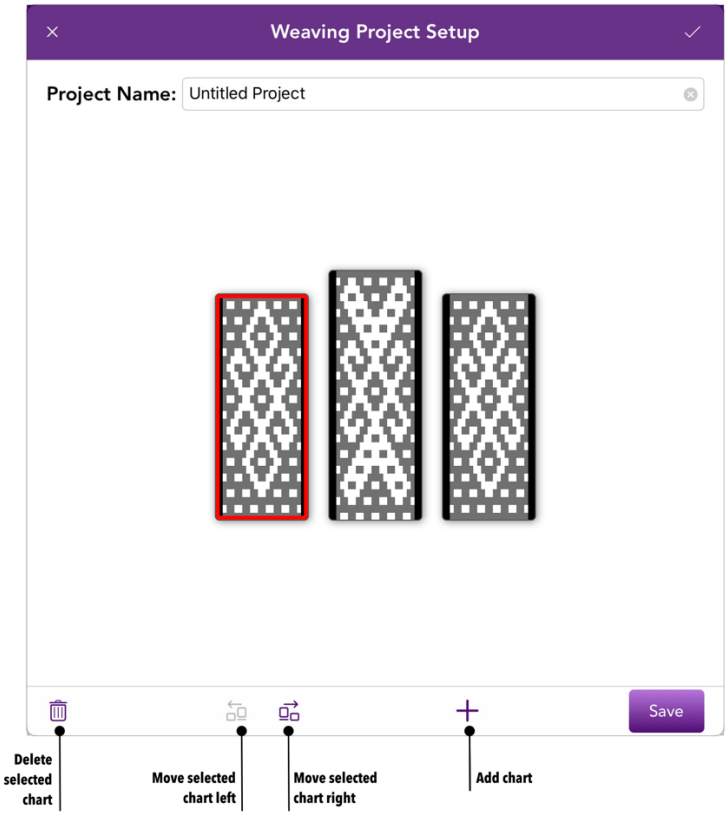


Figure 60: Weaving Project Setup

Note that you can include the same chart more than once in a Weaving Project, like you see in Figure 60 (the two edge charts are the same one). At the top of the Weaving Setup dialog, you can give your project a name. If you don't specify a new name, it will be called "Untitled Project". After you've arranged the charts in the desired order, tap "Save" to create your weaving project.

If your project only has one chart, it will look like Figure 61, if it has multiple charts – it will look like Figure 62. The main difference between them is the actions menu have a slightly different structure, and the multi chart project has more dots in the middle of the toolbar and small up/down arrows on the toolbar.

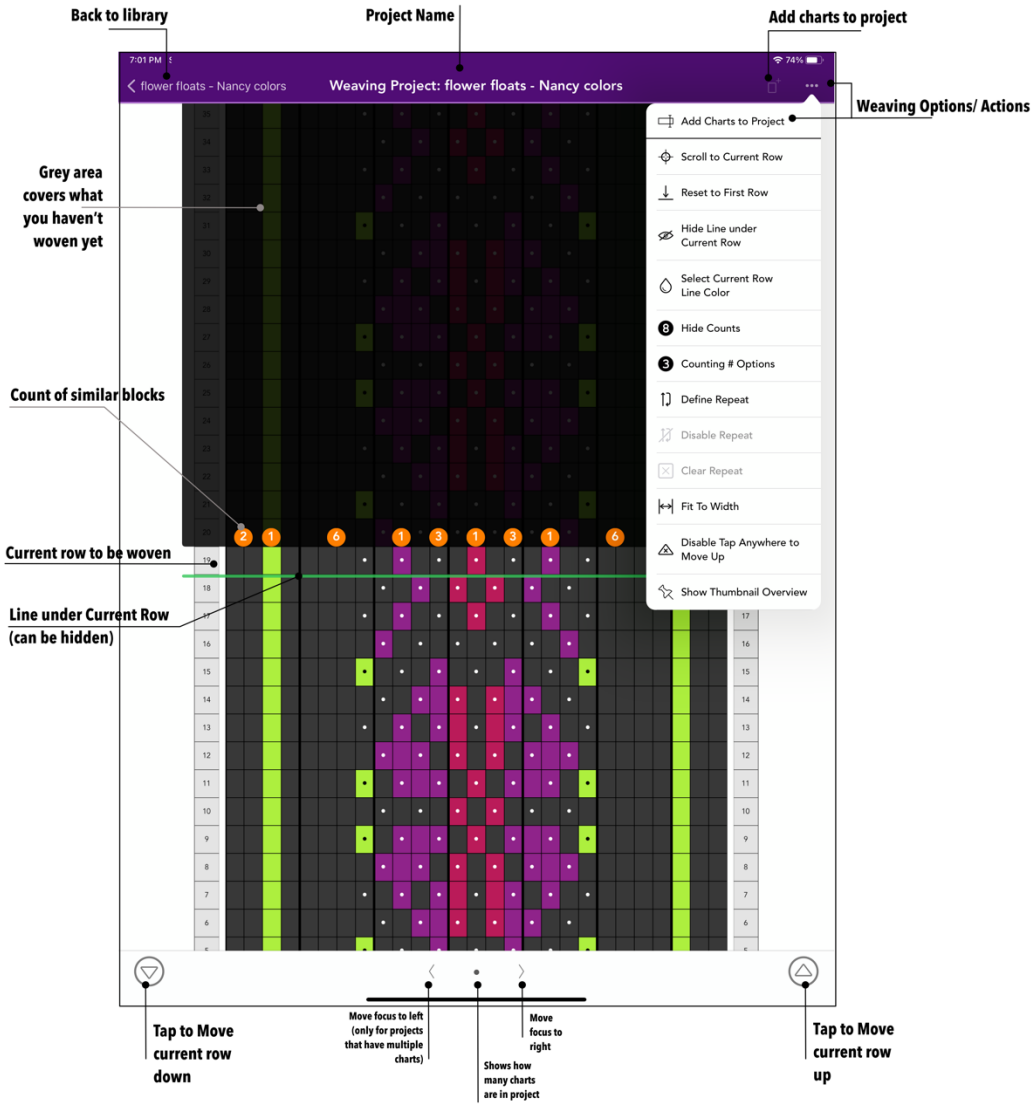


Figure 61: Weaving Tracker for a single chart

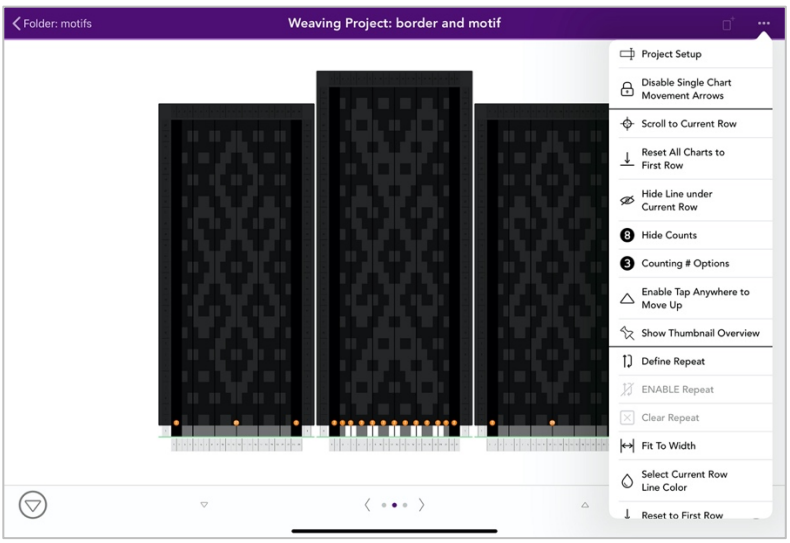


Figure 62: Weaving Tracker with multiple charts

If there is more than one chart, there will be more dots in the center bottom, matching the number of charts in the project. Those controls don't do anything if there's only one chart regardless of how you created your weaving project.

When you enter the Weaving Tracker for a chart for the first time, it will be setup and ready to weave row 1 at the bottom of the chart. The row with the green line below it and the see-through gray box above it is the current row. (The example Weaving Tracker in Figure 61 shows the chart ready to weave row 19). The see-through dark gray box at the top of the chart partially obscures rows you haven't woven yet so you can focus on the row you're currently working on. The green line below the current row can be hidden if desired (using the **Hide Line** action in the ••• menu. You can also change the color of this line by choosing **Select Current Row Line Color** if the color green doesn't contrast well enough with your chart.

You can move the current row upwards by one row by tapping on the up button at the bottom right of the screen. If you need to move back down, tap the down button. As the current row changes either up or down, it will stay visible as the app scrolls the chart for you.

When you hit the top or bottom of the chart, the tracker will wrap around automatically. If your chart has a section that you'd like to weave more than once, you can easily define an area to repeat using the **Define Repeat** command. The Weaving Tracker will then keep the current row inside the defined repeat area until turned off. (See Section 9.4 for details)

9.2 Weaving Tracker Actions Overview

Starting with Warp Visualizer version 1.2, you'll see a slightly different structure in the Weaving Tracker ••• menu if you have one chart or multiple charts in your weaving project. Figure 61 shows the menu for a single chart, Figure 62 shows multiple charts. Figure 63 shows the two menus side by side.

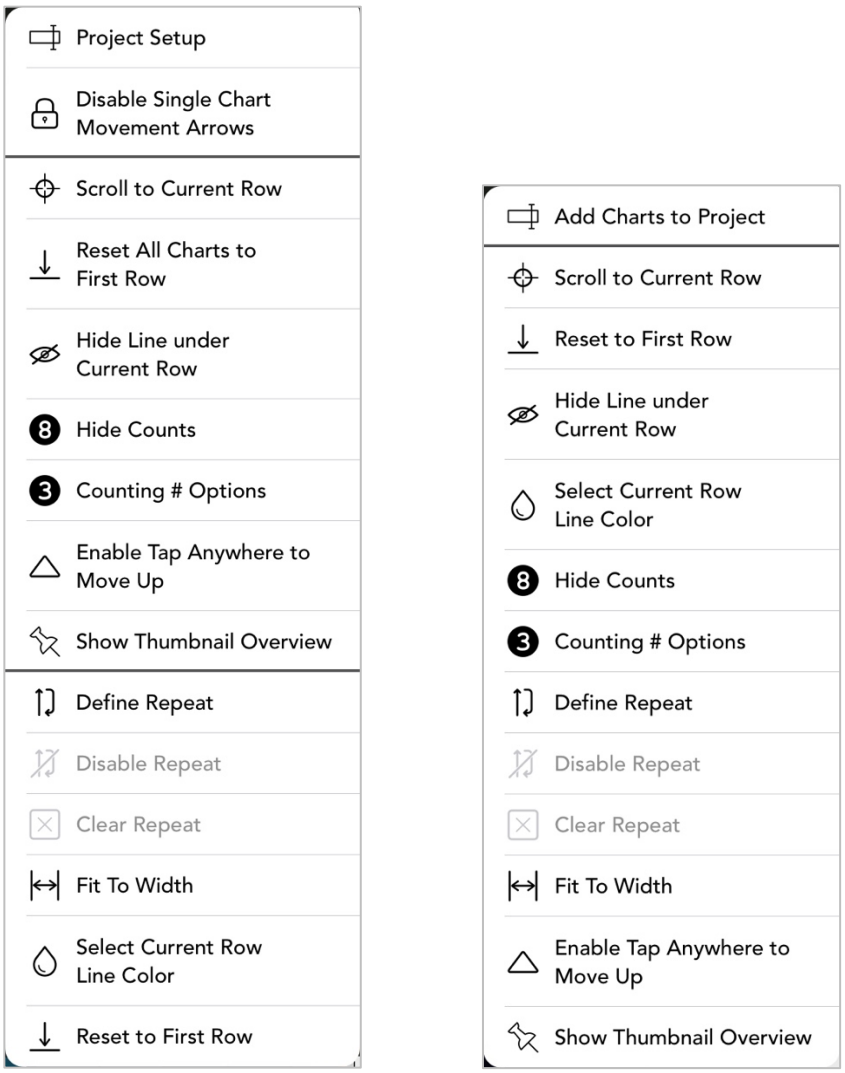


Figure 63: Weaving Tracker menus for multiple chart projects, and single chart projects

In both menus, the first item will bring up the Project Setup dialog, even though the text is slightly different. The project setup dialog will let you change the name of the project and also add charts, remove charts and reorder the charts in the view (See Figure 60). For single chart weaving projects, all the items below the first item in the ••• menu will apply to that single chart.

For multi chart projects, the items in the second section apply to all charts: Scroll to Current Row, Reset All Charts to First Row, Hide Line Under Current Row, Hide Counts, Counting # Options, Enable Tap Anywhere to Move Up and Show Thumbnail Overview. The last section in the menu will only apply to the chart that's currently indicated as the focused chart by the small dots at the bottom center of the screen.

Figure 64 shows a weaving tracker that has 3 charts, and the center one is the currently focused chart.

Figure 64: Focused Chart indicator in Weaving Tracker (dark mode & light mode)

If you want to perform an action on a different chart, use the left and right arrows to each side of the dots to change which chart is focused. The view in the Weaving Tracker will shift left or right to bring that chart into view, and the dot will change to indicate which chart is currently focused. Note that if you have an external keyboard attached to your iPad (any Bluetooth keyboard, or an Apple keyboard folio), you can also use the left and right arrow keys to change the focused chart. See Section 9.3 for other external keyboard commands you can use in the Weaving Tracker.

Review the table below to learn more about the rest of the options in the Weaving Tracker. Options are listed in alphabetical order after the first two to make it easier to find them.

	Action	What happens?
	Project Setup / Add Charts to Project	The Project Setup dialog will be shown, allowing you to rename the project, add additional charts, remove charts, or rearrange the chart order.
	Clear Repeat	Remove the defined repeat permanently. See Section 9.6 for details.
❸	**Counting # Options**	Brings up options related to how block counts are calculated and displayed. See Section 9.7 for details.
	Define Repeat	Define an area of the chart to repeat while weaving. See Section 9.4 for details.
	Disable Tap Anywhere to Move Up[4]	Select to disable the ability to advance rows by tapping anywhere on the chart. You can re-enable it by selecting △ **Enable Tap Anywhere to Move Up**.
	Disable/Enable Single Chart Movement Arrows	(only available in multi-Chart projects) The small arrows on the toolbar will allow you to move the current row on only the focused chart. If you'd rather disable these arrows once you have your project ready to go, select this option. Single chart arrows are enabled by default.
△	**Enable/Disable Tap Anywhere to Move Up**	By default, you'll need to use the large arrows in the lower right or left of the Weaving Tracker to move up or down. If you'd like to be able to tap anywhere in the chart area to move up, you can enable this option. This option is disabled by default.
	Enable/Disable Repeat	Enable or disable constraining the current row location inside a repeat. See Section 9.5 for details.
	Fit to Width	Changes the zoom level of the chart so that it fills the width of the screen as much as possible. There are limits to how zoomed out or in a chart can be. It's possible the chart might be too wide to fully fit on the screen, or too narrow to completely fill it. A chart in the Weaving Tracker can always be resized by using standard pinching gestures.

[4] This setting is not currently persisted; and will automatically re-enable itself when you come back into the Weaving Tracker. This feature is not available in the Dual Weaving Tracker.

Hide Counts	Hides the small circles with block counts that sit above the current row.
Hide Line Under Current Row	Select to hide/show the green line under the current row. If the row is already hidden, this option will be labeled "Show line under Current Row"
Reset All Charts to First Row	Sets all the chart's current row to row 1, at the bottom of the charts. Only available with multi chart projects.
Reset to First Row	Sets the current row to row 1, at the bottom of the chart. You can quickly set any row to be the current row by long tapping on the row in the chart. You'll be prompted to confirm before the change is made.
Scroll to Current Row	This is a shortcut to make the current row visible if it has been moved off-screen.
Select Current Row Line Color	Always applies to only one chart. You can change the current line color used to draw the line underneath the row you're weaving. Default is green.
Show/Hide Thumbnail Overview	This will show a thumbnail overview of your chart(s). The charts will be aligned on the current row, and as you move up (or down) in your project, the charts will shift alignment so you can see how they fit together. See Figure 71 and Figure 72 for examples. The thumbnail overview can be moved to any corner of the Weaving Tracker. Tap the "X" in the upper right corner of the thumbnail to close it, or select "Hide Thumbnail Overview" from the menu.

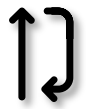
9.3 Keyboard Commands

The Weaving Tracker supports using a keyboard if you happen to have an Apple keyboard or other Bluetooth keyboard connected to your iPad. There are several keys mapped to the same action. The following table covers what keys are available and the resulting action in the tracker:

Key	What happens?
Space Bar	Move UP in the chart to the next row
Return/Enter	Move UP in the chart to the next row
Delete/Backspace	Move DOWN in the chart a single row
Right Arrow	Change the focused chart, moving to the right. Will wrap around to the other side if you're already at the end of the chart list. Not available in a single chart project.

Left Arrow	Change the focused chart, moving to the left. Will wrap around to the other side if you're already at the end of the chart list. Not available in a single chart project.
Up Arrow	Move the currently focused chart up to the next row. If single chart arrows are disabled, this will have no effect.
Down Arrow	Move the currently focused chart down a single row. If single chart arrows are disabled, this will have no effect.

9.4 Repeating Rows



In order to weave a section of a chart multiple times you can use **Define Repeat** in the ••• menu.

When you select **Define Repeat**, a dialog box will pop up confirming that you will be defining a repeat and will walk you through the process. Tap "Get Started" at the bottom of that dialog box to begin. Your chart, without any weave tracking indicators will be on your screen. Select the rows you would like to repeat by dragging your finger over the row numbers (just like creating a selection in the chart editor). Once all the rows in the desired repeat are selected, click the OK button at the bottom of the screen (See Figure 65). To proceed without changing the repeat definition click Cancel.

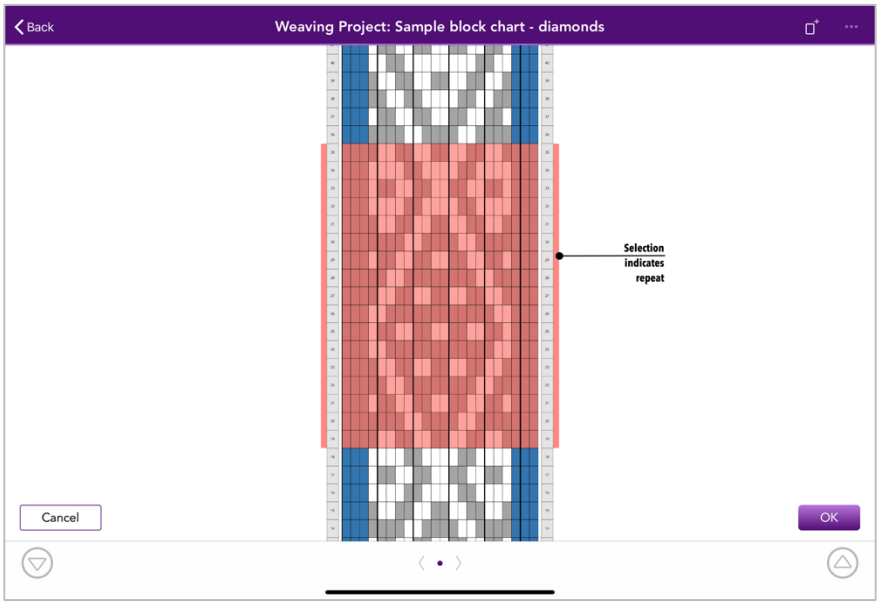


Figure 65: Defining a Repeat

Once you click OK and finish defining the repeat, the screen will go back into the weaving tracker with the dark gray box drawn above the current row again. It's possible that the current row is not inside the repeat you just defined. Once you move up and then enter the repeat, the next row and previous row actions will always keep you inside the repeat, wrapping around as necessary. Figure 66 shows the chart with current row towards the top of the repeat.

Figure 66: Weaving Tracker with repeat defined

You can redefine a repeat at any time. Simply select **Define Repeat** again. Any previously defined repeat for that chart will be pre-selected. You can now change the selection as desired – making it larger, or selecting a different set of rows. As you modify the selection, the prior repeat will be shown using gray bars on the outside of the row numbers. See Figure 67 for an example of redefining a repeat. Note: Once a new repeat has been defined, the previous repeat is replaced. Only one definition of a repeat is available for each chart at any given time.

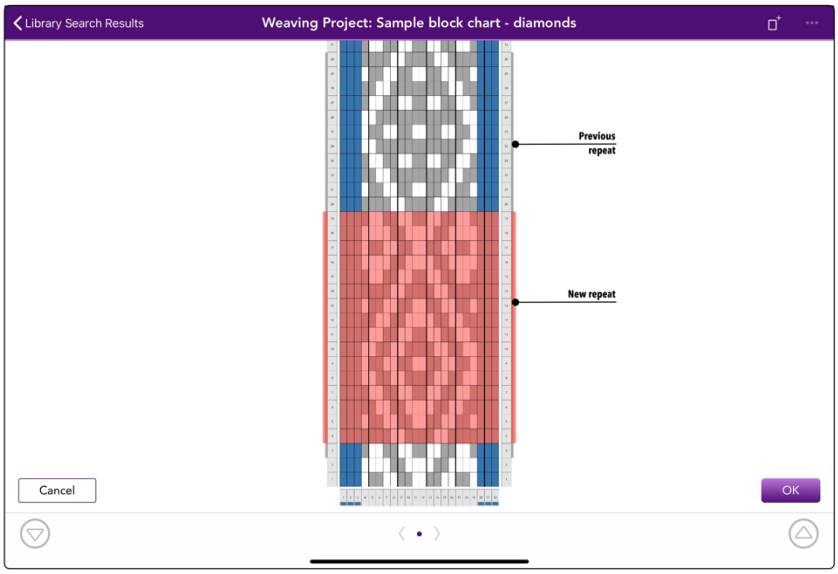


Figure 67: Existing Repeat indicator

9.5 Disabling / Enabling Repeat

If you have a repeat defined, but don't want to constrain movement of the current row when moving up and down you can use the **Disable Repeat** option. The repeat will still be defined, but it won't prevent you from moving past that area. You'll see the repeat rows

marked using a gray border. If the repeat is disabled, the menu item will be called **ENABLE Repeat**. If there is no repeat defined, this option will be grayed out and you won't be able to select it.

9.6 Clear Repeat

To remove the repeat definition and stop constraining movement of rows, you can select **Clear Repeat**. This option will be grayed out if there isn't a repeat defined. It isn't required to clear the repeat first if you simply want to define a different section of the chart to repeat. You can simply use **Define Repeat** and change which rows are part of the repeat.

9.7 Calculating Counts

One of the helpers in the Weaving Tracker is the block/thread counts placed above the current row. By default, a new number is shown every time the color changes, regardless if it's considered a Light or Dark color. Figure 68 shows a chart where you can see that the two shades of yellow are counted distinctly. Both yellows are considered "Light" colors as you can see the color swatch next to the column numbers on the bottom of the chart. Reading from right to left, there are 9 pale yellow, then 1 medium yellow, then 2 blue, and 4 medium yellow, 2 blue, 1 medium yellow, 9 pale yellow.

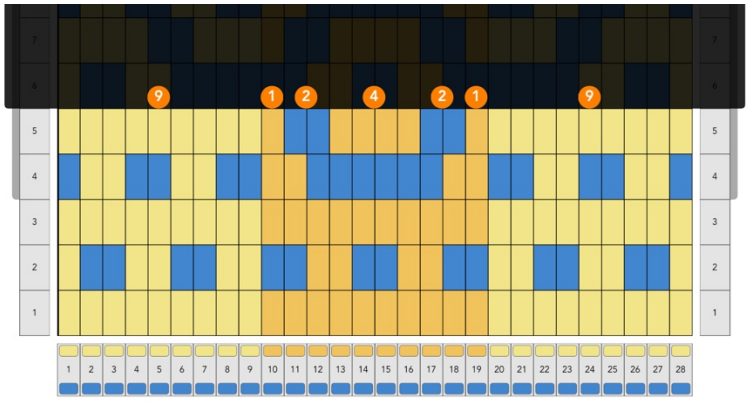


Figure 68: Weaving Tracker counts calculated using different colors

When the colors are especially close in value, it might be difficult to distinguish the threads from each other and you might prefer to see the counts based on Light vs Dark colors. Figure 69 shows that same chart with counts by Light/Dark.

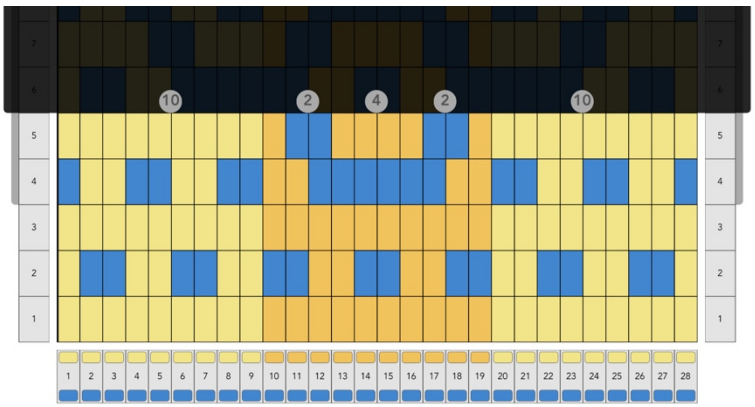


Figure 69: Weaving Tracker counts calculated using Light vs Dark

First you should notice that number circles are gray instead of orange. This should help you remember that the counts are being calculated differently. The first number 10 represents all the Light blocks that are contiguous (9 pale yellow + 1 medium yellow) and the count changes when it finds the 2 Dark blocks. So, the counts in this case are: 10 Light, 2 Dark, 4 Light, 2 Dark, 10 Light.

There are projects where one counting scheme makes more sense than the other, and your choice will be saved on a per chart basis.

If you find the counts distracting and don't want to see them, you can hide them completely by using ❽ **Hide Counts**.

To change how the counts are calculated, and how many similar blocks are required to display a number at all, select the ❸ **Counting # Options** item (Figure 70).

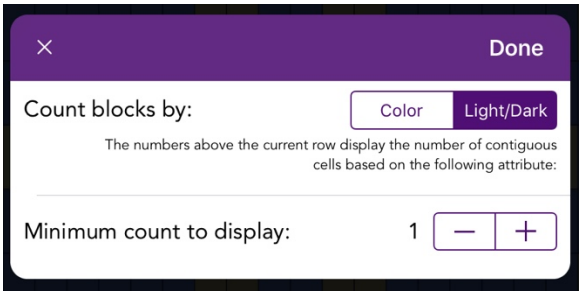


Figure 70: Counting # Options

The default for the minimum count to display is 1, but if you have a lot of single blocks in a row and that may 1's in a row are distracting, you can change this number to a higher value.

9.8 Show/Hide Thumbnail Overview

While weaving, it's useful to get a high-level view of what your full chart looks like. You can use this option to display a small thumbnail in the lower right corner of the weaving tracker. Just like the Thumbnail overview in the Chart Editor, you can move where the thumbnail is located by dragging it to a different corner. Warp Visualizer will remember the location and visibility of the thumbnail, so if you leave the Weaving Tracker and come back later, the thumbnail will be automatically shown again for you. See Figure 71 for an example of a chart with the thumbnail showing in the upper left corner.

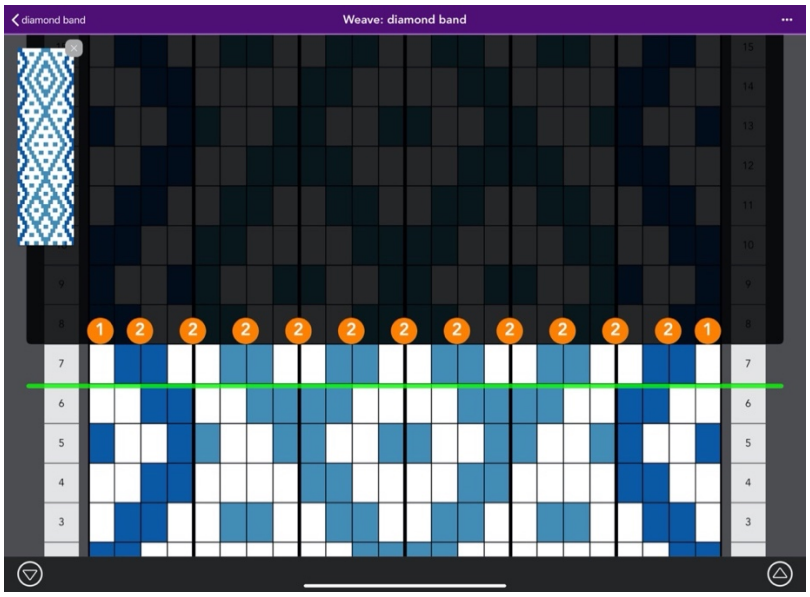


Figure 71: Weaving Tracker with a Thumbnail Overview showing (one chart)

Figure 72: Weaving Tracker thumbnail overview example

To close the thumbnail, simply tap on the x in the upper right corner of it, or select Hide Thumbnail Overview from the More button ••• menu.

9.9 Dual Weaving Tracker

Starting in Warp Visualizer version 1.2, you can create Weaving Projects with 1 or more charts, and you won't see reference to the Dual Weaving Tracker anymore in the menus. Please refer to Section 9.1 for how to create a Weaving Project with more than one chart.

10 SHARING!

Warp Visualizer lets you easily share your charts in several ways. This section covers how to do that.

10.1 Share Image

There are times when you want a simple image of your chart to put into another document, print out or send to your fellow weavers.

To save or share an image of your chart, use the **Share Image** action either from the Library ••• more actions menu on a specific chart, or the Chart Editor ••• actions menu. You might notice a quick waiting spinner in the middle of the screen if your chart is really large, and you'll soon see the Apple share sheet as shown in Figure 73. From there you can use Message, Copy, Save Image (to the camera roll) or send it to another app. Note: the order of the actions in each section of the share sheet on your device will be different if you're re-ordered them.

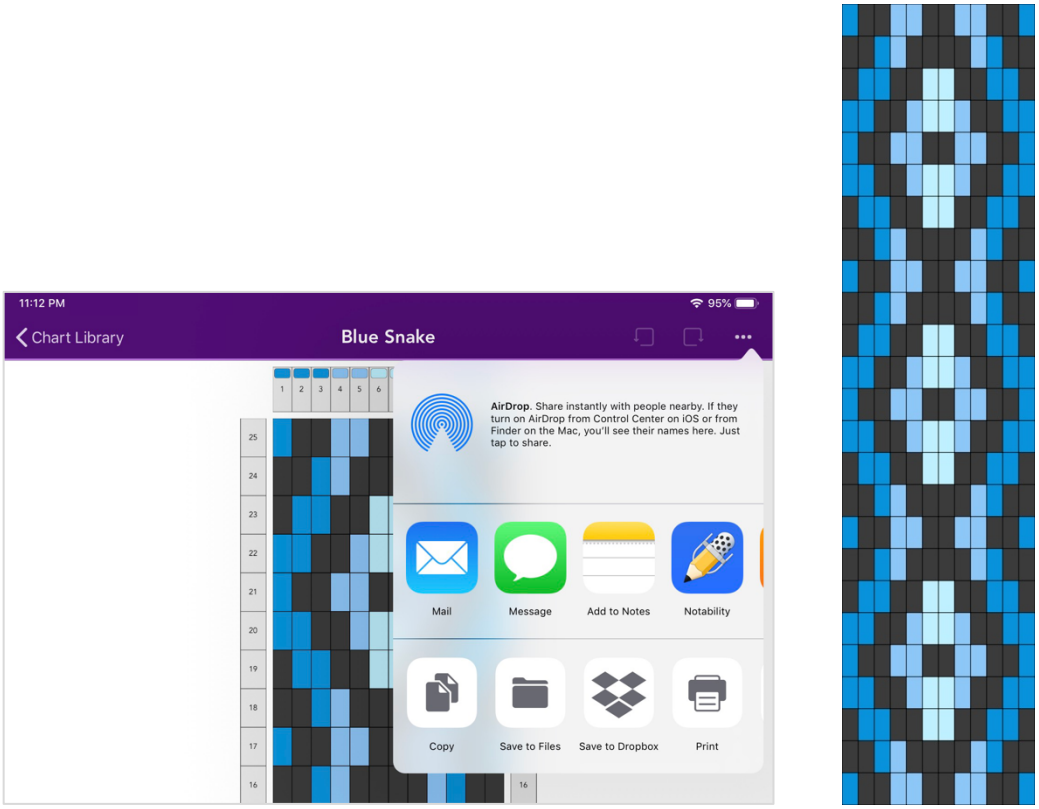


Figure 73: Sharing chart image screenshot & resulting chart image

If you want to include the row and column numbers in the image, don't forget to select that option in the **Chart Options** (accessible from the chart editor) for your chart before using **Share Image.**

10.1.1 Export limitations

Warp Visualizer allows you create a chart of any size. However, because the amount of memory on your device is limited to a fixed amount, exported chart images will scale down as your chart gets larger.

To get a full-scale image, you can have a maximum of 100 rows and 100 columns in your chart. Full scale means that the exported image is drawn with the same size blocks as the chart is at the default size on your screen (ignoring zooming in and out). A chart that is 100 rows tall and 100 columns wide will be exported full scale. In shorter notation, you could say the chart is 100 x 100. If you reduce the number of rows, then you can have more columns and still get a full-scale image. Because of this, a chart that is 50 rows by 150 columns (50 x 150) will also be exported at full scale, as will charts that are 24 x 18, 50 x 48, 120 x 10, etc.

If your chart is exported at half scale, the blocks are drawn half the size, quarter scale means they are 25% of the original size. The following table provides examples for each scale:

Export Scale	Maximum # of Rows	Maximum # of Columns	Examples
Full Scale (100%)	100 rows	100 columns	100 x 100 30 x 24 16 x 53
Half Scale (50%)	300 rows	300 columns	300 x 300 120 x 130 24 x 200
Quarter Scale (25%)	500 rows	500 columns	500 x 500 300 x 700
15% scale	More than 500 rows	More than 500 columns	501 x 501

In order to export an image of your whole chart, it has to be drawn all at once in memory, which is very memory intensive. Due to this, older devices will have a harder time with exporting large images. Older devices also might not have enough memory to export large images at all – and the app will crash when you attempt to export. Please note – due to technical limitations we are unable to detect if your device has enough memory prior to starting the export. No data is being saved for your chart during the export so if the app crashes, simply run it again, try and reduce how many rows and columns are in your chart before exporting again. Tests were done using the above chart sizes to Scale settings on an iPad mini 4; and we were able to successfully export charts up to size 750 rows by 750 columns without crashing. An older generation iPad mini (gen 2) was fine up to around 250 x 250, but was crashing at the higher end of each scaling section at times. iPad Pro devices saw no crashes when exporting large charts.

10.2 Share Thumbnail

There are times when you just want a smaller version of your chart. Often when I'm working on a design with some friends, we will be texting back and forth and asking for advice on the pattern or colors. The thumbnail is a perfect way to see how a pattern will look with a smaller file size and no distracting block borders or guidelines. Figure 74 shows the thumbnail version of the same chart from Figure 73, in addition to an oval chart.

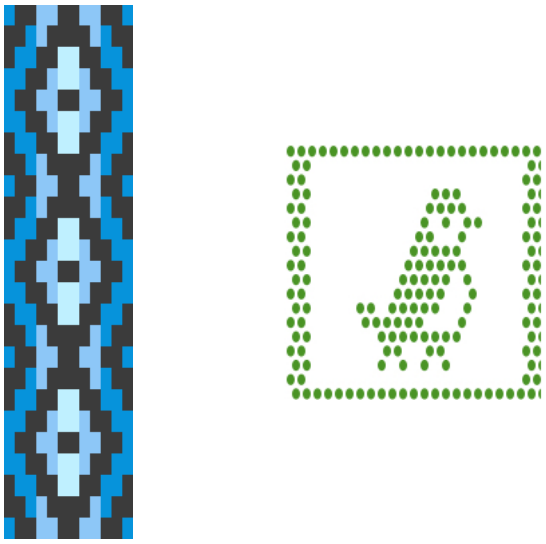


Figure 74: Thumbnail images of a block and an oval chart

10.3 Mail Chart File

To be able to load your chart onto a different device, or share it with a friend who also owns Warp Visualizer, you can use the **Mail Chart File** action. You will be shown a mail composer window where you can enter the recipient, change the subject and adjust the contents of the email if desired. The email will contain a thumbnail of the chart, the name, size, date it was created and the chart file itself, which can be loaded into Warp Visualizer.

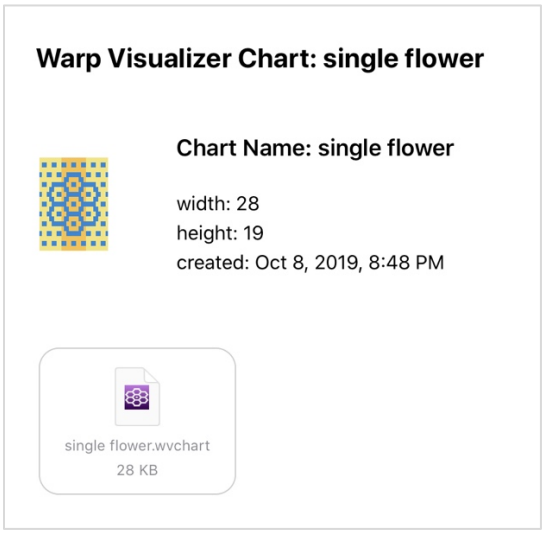


Figure 75: Example contents of an email when mailing a chart file.

Note: the thumbnail will only show when viewed on an iPad or an iPhone – unfortunately gmail on your computer won't display the thumbnail properly as it doesn't like inline images. ☹

If you look closely at the sample email content in Figure 75, you'll see that Warp Visualizer charts use a filename extension of ".wvchart" in order to identify them as belonging to the Warp Visualizer app. You'll be able to see this extension in the email or if you save the file to a cloud service such as iCloud, Google Drive or Dropbox.

10.4 Share Chart File

To share a Warp Visualizer chart via Air Drop, save it to a cloud service (such as Files using iCloud, Dropbox, Google Drive) you can use Share Chart File. You can access this action from the ••• button on a specific chart in the Library, or from within the editor in the ••• more chart actions menu. Once you've selected **Share Chart File** item, the share sheet will be shown (see Figure 76). The name of your chart and the size of the file is shown at the top left.

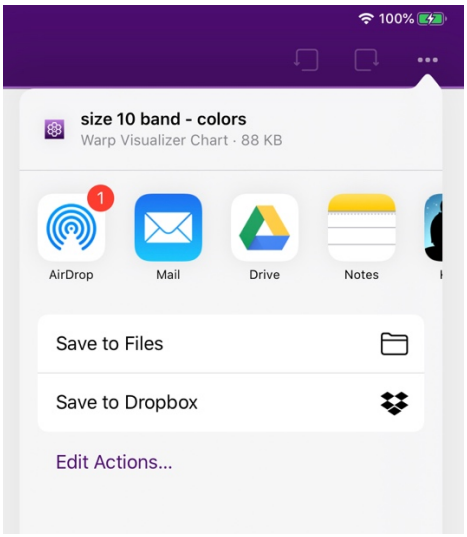


Figure 76: Share sheet when sharing a single chart[5]

Once you've completed sharing you can dismiss the share sheet by tapping anywhere outside of it.

10.5 Importing a Chart file

Once you have a Warp Visualizer chart file you can import it back into Warp Visualizer easily. The chart will be imported using the size, name, colors, etc used when it was exported. If there's another chart with the same name as the imported chart, Warp Visualizer will still create the new chart (remember chart names

[5] Your share sheet will most likely look slightly different as you can edit the which actions show up and in what order, and the apps you have installed affect what's available.

aren't unique). Once you've imported the chart, you can rename it or make any other edits to it just like you would any other chart in your library.

Importing Limitations: Note that when you want to import any charts you have saved using sharing, you can only import one chart at a time into Warp Visualizer.

10.5.1 Import from email

To open a chart file in Warp Visualizer from email, once you receive the email, simply tap on the file and select the "Copy to Warp Visualizer" icon. Warp Visualizer will prompt you before importing the chart into the app. The chart will be loaded into Warp Visualizer with whatever name it had when it was exported. Upon successful import, Warp Visualizer will take you straight to the edit chart screen for the new chart. The new chart is created in the root of your Chart Library even if you were viewing a different folder.

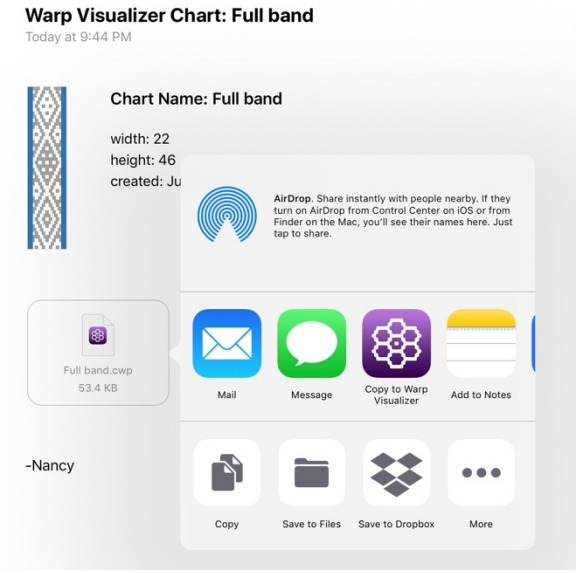


Figure 77: Loading a chart into Warp Visualizer

10.5.2 Import from Files app

To import a chart from within the Files app, hold on the chart file until the actions menu appears, then select Share. Choose "Open in Warp Visualizer" and you'll be asked in Warp Visualizer if you want to import the file. Upon successful import, Warp Visualizer will take you straight to the edit chart screen for the new chart. The new chart is created in the root of your Chart Library even if you were viewing a different folder.

10.5.3 Import from other apps

When importing from Google Drive, Dropbox, etc – find the option to share or export from within that app then select "Open in Warp Visualizer".

11 RESOURCES

Learn more about Backstrap weaving

- Laverne Waddington's website: backstrapweaving.wordpress.com
- Laverne's books on various weaving subjects available here: https://backstrapweaving.wordpress.com/books-and-articles
- Backstrap Weaving group on Ravelry: https://www.ravelry.com/groups/backstrap-weaving

Warp Visualizer specific resources

- Warp Visualizer group on Ravelry: https://www.ravelry.com/groups/knit-foundry-user-group
- Latest version of this manual: https://knitfoundry.com/warpvisualizer.html

12 OTHER STUFF

The icons used in Warp Visualizer were downloaded from IconBros (either used as is, or modified).
https://www.iconbros.com/