

Notions in Motion

A guide to exploring data and creating storytelling outputs through a video-based qualitative analysis

Notions in Motion: A guide to exploring data and creating storytelling outputs through a video-based qualitative analysis.

David Borish¹, Ashlee Cunsolo², Ian Mauro³, Cate Dewey¹, Sherilee L. Harper^{1,4}

¹Department of Population Medicine, University of Guelph; ²School of Arctic and Subarctic Studies, Labrador Institute of Memorial University; ³Department of Geography, University of Winnipeg; ⁴School of Public Health, University of Alberta.

Technical Support:

Ian Mauro

Marcel Kreutzer

Submitted as supplementary file in:

Borish, D., Cunsolo, A., Mauro, I., Dewey, C., & Harper, S. L. (2021). Moving images, moving methods: Advancing documentary film for qualitative research. *International Journal of Qualitative Methods*. *In Press*.

Table of Contents

Background..... 1

Overview..... 3

In Action..... 4

Process..... 5

Stage 1..... 6

Stage 2..... 9

Stage 3..... 11

Stage 4..... 17

Stage 5..... 20

Stage 6..... 21

Stage 7..... 24

Stage 8..... 37

Conclusion..... 41

Reference List..... 42

Background

Video use in qualitative inquiry and analysis

With increasing opportunities to integrate video into qualitative analytical processes, there are a range of methodological strategies available for researchers who wish to make use of the richness audio-visual data has to offer. For example, work by Knoblauch, Schnettler, Raab, & Soeffner (2006), Heath, Hindmarsh, & Luff (2010), Kissmann (2009), Goldman, Pea, Barron, & Derry (2006), and Derry et al. (2010) all provide practical guidance on qualitative audio-visual data analysis, often from a particular disciplinary lens, such as sociology, ethnography, or the learning sciences.

Complementary to these methodological options, there are also a range of technological possibilities for integrating video into qualitative inquiry. Qualitative analytical programs — or, Computer Assisted Qualitative Data Analysis Softwares — are increasingly being designed to import, manage, and work with a range of multimedia data, including video (Bassett, 2011). For example, within qualitative analysis softwares, like Observer XT (Snell, 2011), NVivo, ATLAS.ti, Transana, and HyperRESEARCH, you can link transcripts with video data, code and annotate video data, search for and define themes related to video, write memos about video, and/or explore connections between concepts within and across video files (Bassett, 2011). More specialized programs have also been developed to support analytical collaboration between researchers using video, such as the DIVER (Digital Interactive Video Education and Reflection) system (Pea, 2006; Pea & Lindgren, 2008).

Clearly, there are strong methodological and technological options for researchers who wish to use video for analytical purposes. However, current qualitative methodological approaches and softwares do not support opportunities for researchers who wish to leverage the storytelling capabilities of their video data, in addition to the analytics. The creative video-editing process — to produce videos and films as we know them — must be performed outside the domain of qualitative research in softwares specific for video-

editing. In other words, qualitative analysis approaches and softwares do not provide room to use video for what video does best – communicate stories.

For researchers who are looking to communicate their qualitative findings to a variety of audiences, video stands as a one of the most accessible, creative, and innovative mediums to reach people (Jewitt, 2012). This communication ability has been recognized within academia, as researchers are increasingly trying to merge this audio-visual tool into the research process (Petrarca & Hughes, 2014). However, the lack of storytelling capabilities within qualitative analysis softwares means that the visual storytelling dimensions of the research need to be fulfilled in separation from the analysis. Consequently, this adds more time and effort to create meaningful storytelling outputs (such as educational videos or documentary films) in addition to analytical outputs.

This how-to guide offers a solution for those wishing to further integrate video into their qualitative analytical process, and for those who seek to produce video-based storytelling outputs as part of their research. Rather than finding ways of integrating video into established qualitative analysis approaches and softwares, our approach is the reverse: finding ways of integrating qualitative analysis into video-making approaches and softwares. This approach is called a video-based qualitative analysis.

Overview

What is a video-based qualitative analysis?

A **video-based qualitative analysis** is an analytical approach that unites the strengths of two distinct fields of work: qualitative research and documentary filmmaking. More specifically, this approach generates analytical outputs and deep understandings from human experiences, knowledge, and stories – something only qualitative research can do – while *simultaneously* producing an audio-visual, storytelling output that can be more easily viewed and communicated back to research participants, communities, and the public – something documentary filmmaking is renowned for. Consequently, there are two overarching opportunities of this approach: 1) systematically investigate qualitative data, and 2) create a storytelling output in the form of a video or film.

The core of this approach combines principles of qualitative analysis with documentary film editing. We have adapted and maximized the coding, searching, and filtering tools within two distinct video-editing softwares for this approach: The *Lumberjack Builder* application, a text-based video-editing and organizational program; and *Final Cut Pro X*[®], a video-editing program. Leveraging their analytical capabilities, these programs are taking the place of pre-existing qualitative analysis softwares.

Importantly, this approach is not devising new ways of theorizing the data collected. Rather, it is uniting pre-existing qualitative methods with audio-visual tools to maximize our understandings of qualitative data, while also supporting opportunities for alternative research outputs to be created. Many of the steps outlined in this approach are already guided by established ways of understanding qualitative data. For example, we were informed by an inductive analysis approach, where concepts are driven from within the data itself, and a thematic analysis, which categorizes and highlights reoccurring themes found in the analysis (Braun & Clarke, 2006; Green & Thorogood, 2004). We suggest taking time to get a sense of the qualitative theories and concepts that are appropriate for your research before engaging with a video-based qualitative analysis.

In Action

How a video-based qualitative analysis has been used.

The video-based qualitative analysis approach was developed as part of a larger multimedia research project called *HERD: Inuit Voices on Caribou* (The HERD Project). This project worked in partnership with Inuit from the Nunatsiavut and NunatuKavut regions of Labrador, Canada, to document, analyse, and communicate Inuit stories and wisdom about their relationship with caribou. At the heart of this project was to co-create knowledge through research-based documentary film work. Our team sought to produce two main outputs for sharing our findings: analytical outputs (in the form of journal articles), and storytelling outputs (in the form of documentary films and video, among other things). Recognizing the lack of qualitative analytical softwares and methodologies to attain these two goals, we worked to overcome this gap by blending the strengths of qualitative analysis with documentary film editing — leading to the creation of a video-based qualitative analysis.

By using a video-based qualitative analysis, we were able to achieve our goals. This analytical approach resulted in the co-creation of journal articles published on a range of social and health science topics, including identity and cultural continuity (Borish, Cunsolo, Snook, et al., n.d.), social connections (Borish, Cunsolo, Snook, et al., n.d.), and ecological grief and mental health (Cunsolo, Borish, Harper, et al., 2020). This approach is contributing to the development of a full-length documentary film, shorter educational videos, and a photobook for release in 2021, focused on communicating this story to audiences within and beyond academia.

Based on the experience of our research and knowledge mobilization efforts, we felt this 'how-to' guide on undertaking a video-based qualitative analysis would be helpful for future research projects that have analytical and storytelling objectives.

Process

Video-based qualitative analysis steps

There are eight general steps to carrying out a video-based qualitative analysis (Figure 1). This outline is designed to be a flexible guideline, adaptable to the needs of your research. Note that at the time of writing this document, we were using Final Cut Pro X® version 10.4.6, and Lumberjack Builder version 2.1.5, so some technical details may change over time.

Steps of a Video-Based Qualitative Analysis



Figure 1: The 8 steps of a video-based qualitative analysis.

Stage 1

Organization and setting up a workflow

Video has the potential to collect large amounts of rich data – sometimes amounts that could seem overwhelming. For example, the HERD project collected over 100 hours of footage project wide. Although these audio-visual data are the core of what will be analysed, it might be difficult to make-use of this information in a smooth and efficient way if there is not a properly thought-out plan for managing the data. That is why Stage 1 of a video-based qualitative analysis is focused on setting-up the organizational structure of your analysis. We recommend setting up a workflow before doing anything else, as that will help you stay organized as you progress through you research process.

Final Cut Pro X[®]

In Final Cut Pro X[®], you can manually set up a workflow that is catered to your specific research needs. In this program, there are multiple levels for organizing audio-visual media, including libraries, events, projects, and folders. A **library** is like an overarching collection that contains events and projects. **Events** are similar to libraries but can contain a combination of audio-visual content and projects. A **project** is an edited sequence of video and/or audio clips and could be anything from a short scene to an entire full-length film. **Folders** will be discussed in more depth in Stage 7. Learning more about libraries, events, and projects is recommended before proceeding with this approach. For more information, visit: <https://www.apple.com/ca/final-cut-pro/resources/>

Library → Event → Project

The first step to setting up a workflow in Final Cut Pro X[®] is to create one overarching library for your project (Figure 2 – B). This library will hold all audio-visual content collected, including filmed interviews (i.e. your data), b-roll (i.e. non-interview footage), and any other information relevant to your project, such as music or sound effects.

Stage 1 – Organizing and setting up a workflow

Since everything will be housed in this library, it might be helpful to name it after your research project.

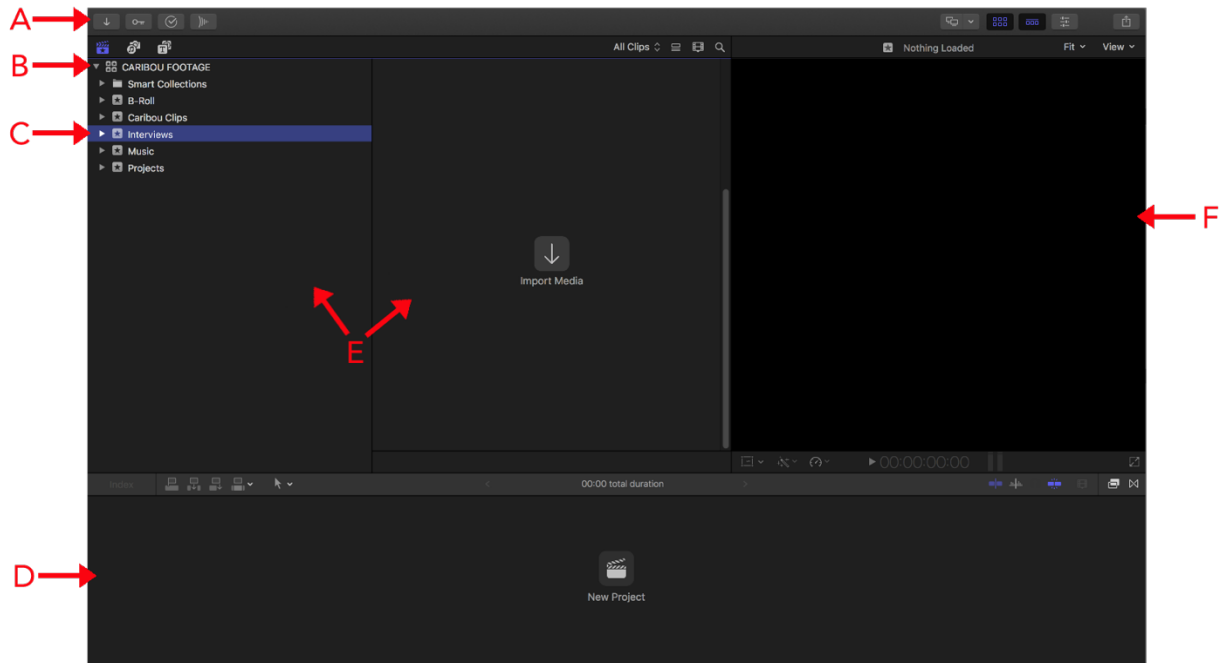


Figure 2: Example of our workflow set up in Final Cut Pro X®, before any audio-visual content and data was imported. Relevant functions include:

- A. Import media function.
- B. Project Library, which will hold all data and content related to the project.
- C. “Interview Event” which will hold all video interview files (drop-down list closed in this figure). Other events include B-Roll (for non-interview footage), Caribou Clips (for caribou specific footage), Music (for music and sound effects), and Projects (for housing all projects in one place).
- D. Timeline, where video-editing will take place for creating video-based storytelling outputs.
- E. Browser, currently with no data or content imported.
- F. Viewer, displaying selected video clip.

The second step to setting up a workflow in Final Cut Pro X® is to create distinct events, which will be the folders that your audio-visual content is organized in. You can create as few or as many events as you need to meet the requirements of your research project. For the HERD project, we created five distinct events, each named after the type of audio-visual content they would contain (Figure 2 – C). It is important to have one event that is solely dedicated to your filmed interviews, so that all interview data are organized in one place. This set-up will be critical for importing interview data into Lumberjack Builder (see Stage 2). As interview footage is imported into this event, it is helpful to rename the title of each interview file to include the name of the person that

Stage 1 – Organizing and setting up a workflow

was interviewed. This way, the audio-visual data associated with a participant can be easily accessed by typing in participant names in the search bar, in addition to the date that the interview was conducted on. When working with audio-visual data from multiple interviews, this set-up is an efficient way of retrieving the information you are looking for.

Projects are a third level for organizing audio-visual media. Since projects are used to edit video clips, they are primarily used for creating the storytelling outputs of the research. Feel free to start a project at any point that you want to start video-editing.

Lumberjack Builder

Unlike Final Cut Pro X®, Lumberjack Builder’s workflow is mainly automatic, so there is not a lot of work to do in terms of setting up an organizational structure.

Once you are happy with your workflow in Final Cut Pro X® and once you have started to import interview files into Final Cut Pro X®, you can also begin importing interview files into Lumberjack Builder. This process can be done by importing a Final Cut Pro X® XML file directly from Lumberjack Builder (Figure 3 – A), or simply dragging your “Interview” event (which holds your interview files) from Final Cut Pro X® directly into the Lumberjack software. All interview files will appear in the left-hand column of the “Clip Logging” view in Lumberjack Builder (Figure 3 – V). Interview files will be ordered alphabetically.

Summary:

- Create a set of events that make sense for your research.
- Make sure you have one “interview” event so that all your interviews are in one place!

Stage 2

Transcriptions and data familiarization

Before coding the video-interviews, two important steps are required: transcribing all filmed interviews verbatim and becoming familiar with the data. Although these steps may overlap in a lot of cases, they will be explained separately.

Transcriptions

There are three main options for attaining transcripts of your interview files. Each option has its own pros and cons, so take some time to think about the best option for you.

- **Option 1:** You can transcribe the interviews yourself, which is often cheaper and gives you a chance to become familiar with what you have collected, but it may also be more time consuming.
- **Option 2:** You can get the interviews transcribed within the Lumberjack Builder software itself by adding the video to the “transcript batch” function (Figure 3 - B). Lumberjack Builder uses a speech-to-text algorithm that is automated, which results in a fast and cheap transcription, but one that might be less accurate when working with interviews where people may have accents, or the sound quality is muffled at times. Inaccuracies in the transcript can always be manually edited.
- **Option 3:** You can use an external transcription service that uses computer automated or human transcribers. This option would require you to link the transcription that you gain from these services to the interview file by uploading it to Lumberjack Builder (Figure 3 – W). We found that using an external transcription service with human transcribers was favoured for accuracy and efficiency, though it was more expensive than other options. Specifically, we used Rev.com, but other transcription companies should work just fine, such as Temi.com or Simonsays.com. The “QuickTime text” (qt.txt) format — which is technically a captioning file, not a transcription file — was highly compatible with Lumberjack Builder’s ability to link the text directly to the filmed interview file.

Stage 2 – Transcriptions and data familiarization

At any point, you can easily edit the transcripts simply by clicking on the text-block that you wish to change and writing in the associated textbox. Remember, text-blocks are attached to the video clips, and video clips can be trimmed or lengthened accordingly so that the text-block aligns with the right part of the video clip.

Data familiarization

Familiarizing and immersing yourself with the data collected provides the “bedrock for the rest of the analysis” (Braun & Clarke, 2006:87). It is helpful to read the transcripts within Lumberjack Builder as the video interview is playing so that both the text and the audio-visual experience can be actively engaged with. By listening, watching, and reading the data, you can get an understanding of the depth and breadth of the information you collected before actually starting the coding process. This step is also an opportunity to check the transcripts for accuracy and fix any errors as needed.

One important aspect of this data familiarization step was to take note of how you personally feel when you read, hear, and watch what a participant is saying for the first time. For example, when watching a clip of one participant telling a joke while on a hunting trip, our initial reaction was to laugh at the joke. It is important to take note of these initial feelings because your feelings may change, or even become desensitized, as you increasingly interact with the data. For example, that same joke might be less funny when you are further into the story-editing process and you have heard it multiple times. However, those initial feelings are what you may want to build on in order to potentially spark similar emotions in your audience when they read, hear, and/or watch what a participant is saying for the first time. These initial feelings might be especially important for the storytelling outputs and could even help direct the story-editing process. Further suggestions on taking notes will be discussed in Stage 3.

Summary:

- Choose a transcription option that works best for you and your research.
- Video clips can be trimmed or lengthened to align perfectly with the text.
- Take note of your initial feelings when watching, hearing, and reading the data.

Stage 3

Generating codes in Lumberjack Builder

Once transcriptions are linked to the video interviews within Lumberjack Builder, and you have familiarized yourself with the information collected, the coding process can begin – a vital step for both the qualitative analysis and the storytelling process. This stage is all about producing initial *codes*, which are identifiers for features, characteristics, ideas, and/or elements of interest within the data (Braun & Clarke, 2006; Green & Thorogood, 2004). Essentially, you are organizing the data into groups, which is an important part of the analysis (Tuckett, 2005).

Types of Codes

Within Lumberjack Builder, there are three types of codes that can be applied to a *text-block* (and therefore to the video clips) within the “Clip Logging” view:

- **Keywords:** This is the most detailed – and likely most useful – type of code for the video-based qualitative analysis. **Keywords** are written codes that allow you to describe an idea and attach it to a text-block. In Lumberjack Builder there is a box for “keywords” (Figure 3 – O), which is where you will manually type in the code that applies to the text-block you have selected. Additionally, there is a box for “people” (Figure 3 – R). This allows you to apply people-specific keywords to represent participants, such as the name of the participant. All keywords can be easily imported into Final Cut Pro X®, as will be discussed in Stage 5.
- **Favourites/Rejects:** This type of code allows text-blocks to be visually bolded for **favourites** (Figure 3 – G, L) or paled for **rejects** (Figure 3 - H). We used favourites to highlight rich data so that they stood out in the transcript and rejects to indicate unusable data. This way, rich data could be easily searched for during the qualitative analysis, and also used to guide the story editing process, as it is visually showing what the best pieces are.

Stage 3 – Generating codes in Lumberjack Builder

- **Colours:** This type of code applies one of 13 colours to a text-block for further visualization of a concept (Figure 3 – P). Colours cannot be easily changed during the coding process, so we recommend using colours to represent a fixed concept (i.e. not changing over time). We used colours to represent the location the interview took place. Other options may include using colours to represent gender, age, people, or time length of interview. Colours are not transferred back to Final Cut Pro X® and are only used to visualize concepts within Lumberjack Builder.

Applying codes

Start applying codes by selecting a transcribed interview that you want to code (Figure 3 – V). If there is no name in the “people” keyword box already (Figure 3 – R), select the entire transcript associated with that interview and then type in the name of the participant so that the name is attached to the entire video interview and text-blocks. To begin coding for concepts within the text, simply select a text-block (Figure 3 – N), and apply a keyword in the “keyword” box (Figure 3 – O), a favourite or a reject (Figure 3 – G,H), and/or a colour as needed (Figure 3 – P).

Within the transcript, text-blocks can be split apart or merged together. How text-blocks are structured have important implications for the ways that codes (and subsequently themes, as will be discussed in the following stages) can be analysed. So, it is important to think deeply about how text-blocks will be structured. **The important thing to understand is that splitting text-blocks apart or merging text-blocks together affects which codes are attached to the same text-block versus different text-blocks.** The way that text-blocks are structured influences what codes are seen to be said together or separately, and therefore what trends and relationships are explored across the data set (as will be discussed in Stage 7). For example, you can split a larger text-block into individual sentences or merge it with another text-block to form an even larger text-block.

Stage 3 – Generating codes in Lumberjack Builder

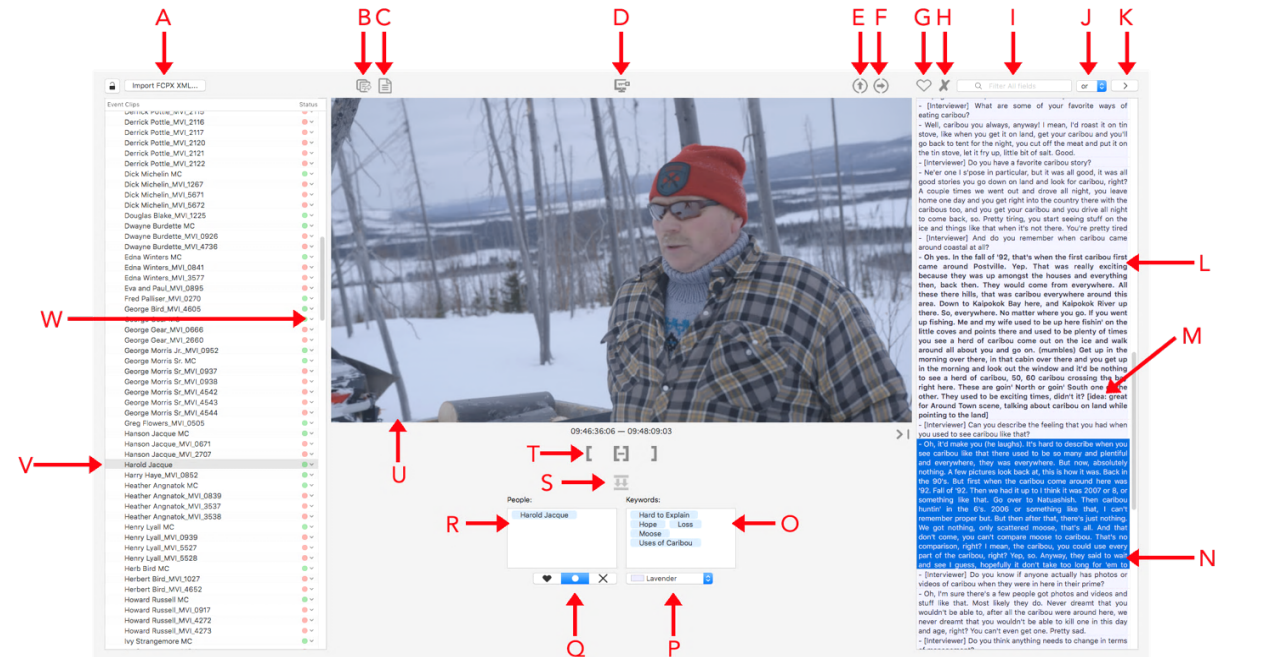


Figure 3: “Clip Logging” view in the Lumberjack Builder program. Functions include:

- A. Importing XML file from Final Cut Pro X®.
- B. Lumberjack Builder’s internal transcription function.
- C. Save selected clip’s transcript.
- D. ‘Global’ keyword button, allowing you to manage, rename, merge, and delete keywords in bulk across a project.
- E. Export codes from Lumberjack Builder into Final Cut Pro X®.
- F. Download a zipped Final Cut Pro X® file in XML format.
- G. Hide or show text-blocks that have been coded as Favourite.
- H. Hide or show text-blocks that have been coded as Reject.
- I. Search bar within “Clip Logging” view, with options to search People, Keywords, Transcripts, or All Fields.
- J. And/Or option – when choosing ‘and’, all text within the search bar must show up together (e.g. “climate change”), whereas with ‘or’, the text within the search bar can show up independently (e.g. “climate” or “change”).
- K. Go to “Story Builder” view.
- L. Example of text-block that has been coded as a Favourite (i.e. bolded).
- M. Example of manually inputting the word “idea” within brackets at the end of the text-block to represent an annotation by the researcher.
- N. Example of text-block selected to be coded.
- O. Box for inputting keywords that are then attached to a selected text-block.
- P. Colour tool, providing the option to apply one of 13 colours to a selected text-block.
- Q. Tool for applying a Favourite, Reject, or Neutral code to a selected text-block.
- R. Box for inputting participant-specific keywords associated with a selected text-block, with example.
- S. Merge tool for combining selected text-blocks.
- T. Video clip trimming tools, for lengthening or shortening a clip associated with a text-block.
- U. Viewer, displaying selected video clip.
- V. Example of video interview selected to be coded – note that the green circle symbolizes a video interview that has been transcribed, and a red circle symbolizes a video interview that has not been transcribed. You can attach a transcript to the video interview by clicking on the arrow to the right of the circle.
- W. Drop-down menu to link an external transcript.

Stage 3 – Generating codes in Lumberjack Builder

For our analytical purposes, it was favourable to keep all of the surrounding data intact so that the context associated with the data would not be lost. This meant that, for us, text-blocks were structured as full answers to questions, which in some cases was a single word (e.g. a participant answering “yes” to a question), and in others was over 1000 words (e.g. a participant talking for 10 minutes to answer one question). The benefit of this approach is that it is easier to examine relationships between themes (as will be discussed in Stage 7) since there can be multiple codes attached to one text-block (i.e. a participant’s answer). The downside of this approach is that a code could be applied to a large text-block, but only relate to a smaller section of that text-block. For example, if a participant talks for 10 minutes to answer one question, you may code for an idea that is only discussed in the first minute, but that same code would be applied to the whole text-block.

Considerations for coding

- There is no limit to the number of keywords that can be applied to a text-block, so coding for as many relevant ideas is recommended. It is also helpful at this stage to keep the keywords abstract and flexible for interpretation (Braun & Clarke, 2006), as they can be adjusted, merged, or separated at a later stage.
- Keywords do not only have to be used to represent concepts in the data. You can create keywords for interview questions, and keywords for answers to specific interview questions. For example, you can have a keyword for “Answer to Question 1” (if you ask the same first question to every participant), which you could then easily search for and explore participant answers to that specific question later in the analysis. Additionally, you could keyword for descriptive statistics (demographics, geography...etc.), which you could use to explore relationships within the data later in the analysis (see Stage 7 on Descriptive Statistics).
- To work towards a storytelling output, it may also be useful to also have keywords for storytelling purposes, not only for analytical purposes. For example, we coded for “transition” keywords, which were text-blocks that might be used as a transition from

Stage 3 – Generating codes in Lumberjack Builder

one scene to another scene in the storytelling output. Since the “transition” keyword did not represent an analytical concept, it would likely not be useful for the qualitative analysis. It was, however, helpful for organizing video clips for the storytelling outputs. So, having storytelling keywords, in combination with analytical keywords, may help with both the qualitative and storytelling objectives.

- Sometimes a text-block may spark an idea that you want to take note of, either for the qualitative analysis, the storytelling output, or both. Lumberjack Builder does not currently offer the option to write an annotation – a note or comment – about a text-block. To fill this gap, we manually wrote the word “idea” at the end of the text-block, followed by the note (Figure 3 – M). This approach allowed for easy access and searchability of the notes by simply typing the word “idea” in any of the search bars (Figure 3 – I; Figure 4 – B; Figure 5 – J). It is also helpful to keep track of these manually inputted annotations in an external document (see Managing Codes below).

Managing Codes

At times it can be challenging to keep track of all the codes within Lumberjack Builder (for instance, we coded for over 120 storytelling and analytical keywords alone during Stage 3). To manage and keep track of the codes you are applying during the analysis, it is helpful to input all codes in a separate document with an explanation of what that code represents. In our case, we used an excel spreadsheet, and called it the *project codebook*. This meant that anytime a code was created in Lumberjack Builder (e.g. creating a new keyword or applying a new colour), the name of this code was documented with a written description of what that code represents. We also kept track of all annotations, so they were compiled in one location.

Alternatively (or additionally), keywords can be managed or viewed across an entire Lumberjack Builder project by clicking on the ‘global’ keyword button (Figure 3 – D). Through this function, you can rename, merge, and delete keywords in bulk across the project. You can also see which keywords have been applied the most (calculated by

Stage 3 – Generating codes in Lumberjack Builder

the duration of the video clips associated with the text-blocks). When developing and merging themes together in Stage 5, this global function becomes particularly helpful.

Summary

- There are three types of codes you can apply in Lumberjack Builder: keywords, favourites/rejects, and colours.
- Think deeply about how text-blocks will be structured, as this will influence your analysis later on!
- There is no limit to the number of codes you can apply, so code away!
- It is helpful to keep notes of your coding, both within and outside of Lumberjack Builder.
- Keep track of all codes and notes in an external document.

Stage 4

Searching for themes and initial storylines in Lumberjack Builder

Searching for themes

In this stage, you are beginning to take note of overarching concepts, themes, and trends occurring across the dataset. This stage is not necessarily required or does not necessarily have to follow Stage 3. That said, searching for themes and initial storylines was a useful process for both the analytical and storytelling objectives of our work.

The first step in Stage 4 is to switch from Lumberjack Builder’s “Clip Logging” view, which is focused on coding individual video interviews, to the “Story Builder” view (Figure 3 – K), which is focused on searching and filtering codes across all interviews. The “Story Builder” view offers a search bar (Figure 4 – B) that allows you to search and filter text-blocks by keywords, transcripts, people, or all fields. This can be done in combination with filtering by Favourites (Figure 4 – D), and filtering using the ‘and/or’ button (Figure 4 – C).

For example, Figure 4 shows how the concept of “hope” was searched for across all fields (i.e. across keywords, transcripts, and people). All transcripts with text-blocks associated with the ‘hope’ keyword (Figure 4 – E), and transcripts that explicitly said “hope” (Figure 4 – F) are therefore highlighted. By searching for text and keywords across all interviews, initial ideas for themes and subthemes can start to form.

It is important to note that Stage 4 represents an iterative and ongoing process of searching for themes for the analysis, and ideas for the storytelling output, that will likely overlap continuously with all of the subsequent stages. This stage is also an opportunity to scan the codes already applied for consistency.

Stage 4 – Searching for themes and initial storylines in Lumberjack Builder

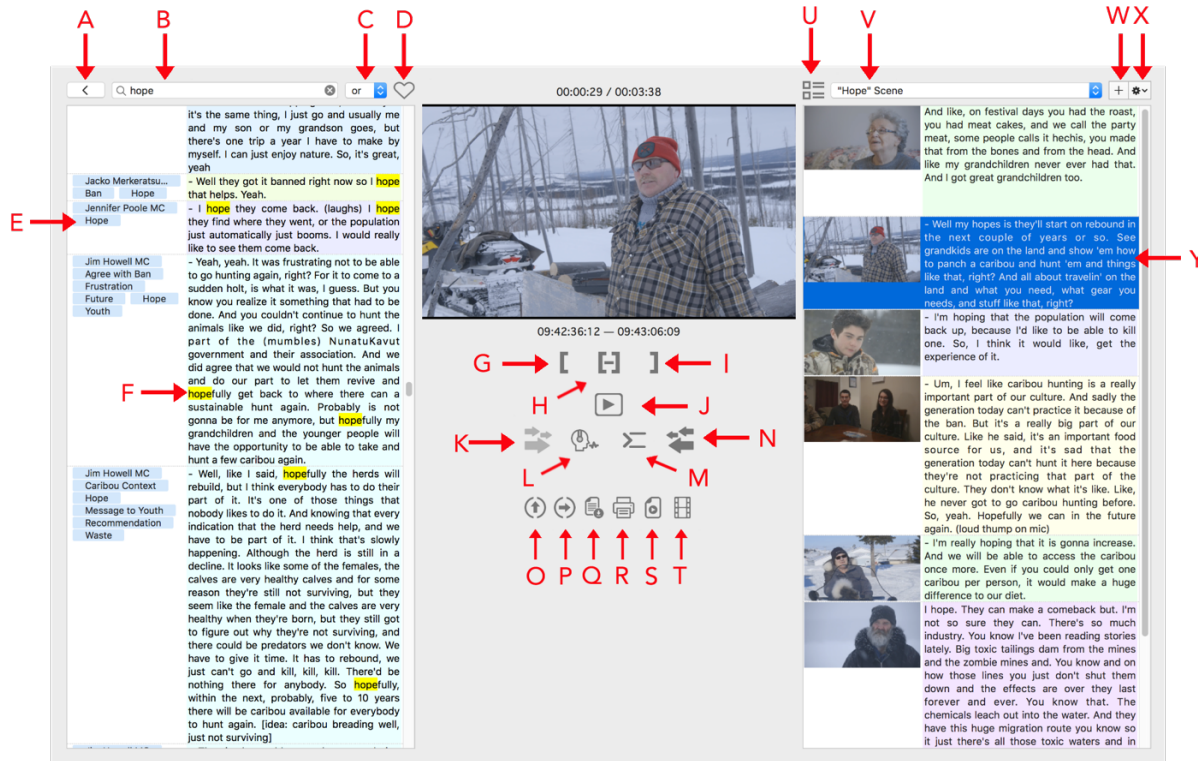


Figure 4: “Story Builder” view in the Lumberjack Builder program. Functions include:

- A. Go to “Clip Logging” view.
- B. Search bar within “Story Builder” view, with options to search people, keywords, transcripts, or all fields.
- C. And/Or option – when choosing ‘and’, all text within the search bar must show up together (e.g. “climate change”), whereas with ‘or’, the text within the search bar can show up independently (e.g. “climate” or “change”).
- D. Hide or show text-blocks that have been coded as Favourite.
- E. The “Hope” keyword attached to a specific text-block.
- F. An example of the highlighted text corresponding with the word searched for in the search bar
- G. Trim the text-block’s “in point” to where the play head is positioned.
- H. Show the trimmer for the video interview.
- I. Trim the text-block’s “out point” to where the play head is positioned.
- J. Preview the storyline.
- K. Add the selected text-blocks to the storyline.
- L. Change voice-over paragraphs using the system voice in Lumberjack Builder.
- M. Add a 3 second gap when previewing the story and in the exported project within Final Cut Pro X®.
- N. Removed selected text-blocks from the storyline.
- O. Send the selected storyline to Final Cut Pro X®.
- P. Download a zipped Final Cut Pro X® files in XML format.
- Q. Download a script of the storyline.
- R. Print the storyline script.
- S. Download the voiceover script.
- T. Download a preview of the storyline in MP4 format.
- U. Show or hide the thumbnails in the storyline.
- V. Select which storyline to work on.
- W. Create a new storyline.
- X. Rename, duplicate, or remove a storyline.
- Y. Example of a highlighted text-block.

Stage 4 – Searching for themes and initial storylines in Lumberjack Builder

To add, change, or delete a code associated with a text-block, simply click on the text-block you want to edit and click the “Go to Clip Logging” button (Figure 4 – A). You will automatically be placed right where that text-block exists in the Clip Logging view, where you can edit the code as needed. Any edits made in the Clip Logging view will automatically be updated in the Story Builder view.

Initial Storylines

This stage is also an opportunity to start thinking about *storylines*. In Lumberjack Builder, storylines are groups of video clips organized together to form a sequence of video clips. Essentially, it is a place to start organizing and editing the video clips together, based on the text-blocks. Lumberjack Builder promotes the use of storylines for text-based editing, since it is not easy to read what people are saying in Final Cut Pro X®. These storylines can be imported directly into Final Cut Pro X® at a later point, where the majority of the video-editing will take place.

For the HERD project, storylines were helpful for both storytelling and analytical purposes. For storytelling objectives, storylines helped with brainstorming potential scenes in the documentary film. For example, one potential scene was going to be focused on hope (Figure 3 – V), so the “hope” storyline was a place to organize text-blocks related to this concept that we might use later on when video-editing. For the qualitative analysis, grouping together content related to a concept in one storyline, and then downloading that storyline (Figure 4 – Q, R) was helpful for extracting specific quotes when in the writing phase (Stage 8). For example, when writing on the concept of “hope” for a journal article, it was helpful to download a PDF document of the “hope” storyline with all relevant quotes associated with participants.

Summary

- Search and filter text-blocks by keywords, transcripts, people, or all fields.
- Easily add, change, or delete a code associated with a text-block.
- Start grouping text-blocks into storylines for initial story development and data organization.

Stage 5

Developing themes and subthemes

In this stage, the analysis is re-focused to sorting and collating codes into distinct groups or themes. Note that depending on your research needs and scope, this phase is optional. More information on alternative forms of exploring data without sorting and collating codes will be discussed in Stage 7.

If developing themes and subthemes is required, we recommend that this phase mainly be completed *outside* of both Lumberjack Builder and Final Cut Pro X[®]. This is, in part, because using visual representations for sorting and grouping codes, such as mind-maps, tables, or stickie-notes may be helpful (Braun & Clarke, 2006; Green & Thorogood, 2004), all of which are not offered within Lumberjack Builder nor Final Cut Pro X[®]. It is helpful to group codes into potential themes and subthemes within the project codebook, writing descriptions wherever possible.

Describing the details of developing, reviewing, and refining themes is beyond the scope of this guide. We recommend reading established qualitative works, such as Braun and Clarke (2006), Green and Thorogood (2004), and Patton (1990) for more information on how to carry out this phase of a thematic qualitative analysis. In short, when developing themes, some codes may form *primary themes* on their own, while others may form *secondary themes* within primary themes (i.e. sub-themes), *tertiary themes* within secondary themes, or even discarded from the analysis (Braun & Clarke, 2006). Determining the themes from the data might be an iterative, ongoing, and constantly changing process (Braun & Clarke, 2006). This means that themes may be combined, separated, or refined several times before the final list of themes is devised. What is important is that, by the end of this process, the primary themes should be clear and distinct, and the information within the primary themes (i.e. the secondary themes, tertiary themes...etc.) should be congruent (Patton, 1990).

Stage 6

Importing codes into Final Cut Pro X[®]

The purpose of this stage is to link the codes that you applied to the text-blocks and video in Lumberjack Builder — the keywords, favourites and rejects, as well as the new themes and subthemes created in Stage 6 — to the video interviews in Final Cut Pro X[®]. Importing codes from Lumberjack Builder into Final Cut Pro X[®] can be done multiple times and at any point, but we recommend doing it after you have developed and named the majority of the themes and subthemes you wish to analyse. It is easier to work within one software at a time, so try to minimize the back-and-forth between Lumberjack Builder into Final Cut Pro X[®] if possible.

You can send the codes directly into your Final Cut Pro X[®] library by clicking the “Send clips to Final Cut Pro X[®]” button within the Clip Logging view (Figure 3 – E), selecting your specific Final Cut Pro Library, and clicking ‘replace’ clips. This step will replace the original un-coded video interviews in Final Cut Pro X[®] with the new coded video interview. The codes themselves will be organized in a variety of ways:

- **Keywords:** In Lumberjack Builder, the keywords are attached to text-blocks, and therefore the video interview clips associated with those text-blocks. In Final Cut Pro X[®], the keywords will be attached to the exact sections of the video interviews that they were applied to in Lumberjack Builder (Figure 5 – S). A blue stamp on the top of the clip symbolizes a section that has been coded (Figure 5 – I). The keywords are organized into *keyword collections* and can be viewed in the drop-down list of the event that they were imported into (Figure 5 – A). Each keyword collection holds all of the video interview clips (i.e. the data) that have been linked to that specific keyword. For example, all video interview clips that were coded with the “First Hunt” keyword in Lumberjack Builder will be found within the “First Hunt” keyword collection in Final Cut Pro X[®] (Figure 5 – T). For more information on keywords within Final Cut Pro X[®], see <https://www.apple.com/ca/final-cut-pro/resources/>

Stage 6 – Importing codes into Final Cut Pro X®

- Favourites and Rejects:** Favourites and rejects are also attached to the exact sections of the video interview clips that they were applied to. A green stamp on the top of the clip symbolizes a section that has been coded as a favourite (Figure 5 – H), while a red stamp on the top of the clip symbolizes a section that has been coded as a reject (Figure 5 – F). Final Cut Pro X® offers a “clip filtering” tool that allows you to choose which clips are seen or hidden (Figure 5 – K).
- Transcript:** In addition to the codes being imported from Lumberjack Builder to Final Cut Pro X®, the transcript of the video interview will be inputted into the “notes” section of a video clip’s metadata (Figure 5 – Q). This is especially valuable for searchability, as text-blocks are attached to video clips, and can therefore be searched across Final Cut Pro X® simply by typing in a text-block in the search bar.

By the end of this stage, you should be able to click on each keyword collection and see which video clips are housed within them.

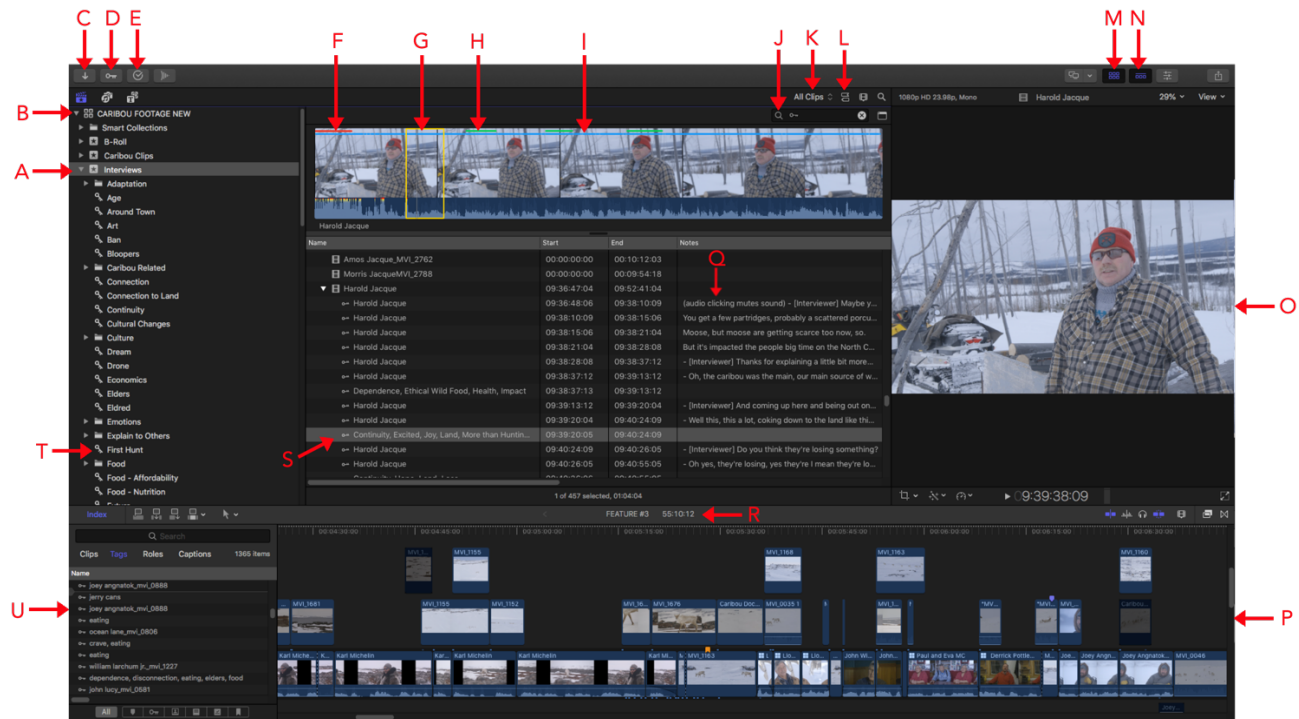


Figure 5: Final Cut Pro X® with the browser, viewer, and timeline open. Functions relevant for the video-based qualitative analysis include:

- “Interview Event” holding all video interview files, with drop-down list open.
- Project Library, holding all data and content related to the project.
- Import media function.

Stage 6 – Importing codes into Final Cut Pro X®

- D. Keyword editor function.
- E. Background tasks window.
- F. Example of a red stamp on top of a clip symbolizing a section that has been coded as a reject.
- G. Section of clip associated with selected keyword (see Figure 5 – S).
- H. Example of a green stamp on top of a clip symbolizing a section that has been coded as a favourite.
- I. Example of a blue stamp on top of a clip symbolizing a section that has been coded with a keyword.
- J. Search bar
- K. Viewer option to filter clips by favourites, rejects, unused, no ratings or keywords, and hiding rejects.
- L. Clip display as either filmstrip or list mode (list mode on in this figure).
- M. Show or hide the video browser (browser showing in this figure).
- N. Show or hide the timeline (timeline showing in this figure).
- O. Viewer, displaying selected video clip.
- P. Timeline, where video-editing takes place for creating video-based storytelling outputs.
- Q. Notes associated with each code. For keywords, transcripts from the video interview (i.e. text-blocks) will be embedded.
- R. Information regarding how many clips are selected, and the length of the clips selected.
- S. Example keywords selected within an interview, connected to the highlighted section in the filmstrip (see Figure 5 – G).
- T. Example of a keyword collection found within the “Interview Event” (see Figure 5 – A). All video clips/text-blocks coded as “First Hunt” will be found in this keyword collection.
- U. Timeline index, which is a running list of all content in your timeline. This tool helps with video editing, organization, and analysis within the timeline, as you can search for and filter through Clips, Tags, Roles, and Captions. Within the tags view (shown in this figure), you can filter through keywords, markers, to-do markers, completed markers, and chapter markers. Learn more about the timeline index here: <https://www.youtube.com/watch?v=0dgcuBUVXjc>

Summary:

- Importing codes from Lumberjack Builder into Final Cut Pro X® will replace the original un-coded video interviews with the new coded video interviews.
- Like Lumberjack Builder, all codes will be attached to the exact segments of the video interview clips that they were attached to.
- Keywords imported into Final Cut Pro X® will be organized into keyword collections that will hold all of the video interview clips (i.e. the data) associated with that specific keyword.
- The transcript of the video interview will be inputted into the “notes” section of a video clip’s metadata, making it easy to search through video clips by inputting text in Final Cut Pro X’s® search bar.

Stage 7

Data analysis within Final Cut Pro X®

Once all of the codes have been imported into Final Cut Pro X®, you can continue to analyse the data within this video-editing software. There are a mix of tools and features within Final Cut Pro X® that can be used to name, categorize, and explore your data. This stage does not necessarily follow a linear path, rather it discusses some analytical pathways to help make sense of the information you coded. In particular, there are three analytical pathways that will be discussed: **Descriptive statistics**, **thematic folders**, and **Smart Collections**. These analytical pathways can be used independently or in combination with each other, all depending on the needs and scope of your research.

Descriptive statistics

One type of data that you can analyse are descriptive statistics. Descriptive statistics may come in a variety of forms and provide simple summaries of the data collected. In our research, we examined and collected a range of demographic and geographic information related to each individual theme, including:

- The number of people discussing a theme or subtheme.
- The number of video clips discussing a theme (Figure 5 – R, Figure 7 – D).
- The gender breakdown of people discussing a theme.
- The age breakdown of people discussing a theme.
- The geographic region and/or community in which the theme was discussed.

As described in Stage 3, you can add keywords to interviews that represent descriptive statistics, including demographic and geographic information. This may be a promising method for analysing participant characteristics and the knowledge they were sharing.

Stage 7 – Data analysis within Final Cut Pro X®

Although this potential to use keywords for analysing descriptive statistics exists, our approach was to manually record this information, with the exception of the number of video clips discussing a theme. For example, if looking at the concept “Excited”, we manually tracked how many people were included within this keyword collection, what their gender and age was, and where they lived. This information was all inputted into a separate spreadsheet in the project codebook (Figure 6).

For the number of video clips discussing a theme, Final Cut Pro X® states how many video clips have been coded within that keyword collection (Figure 5 – R, Figure 7 – D). It is important to recognize that the number of video clips discussing a theme represent the total amount of times that participants discussed themes throughout their interviews, and largely depends on how text-blocks were structured in Stage 3. For example, if text-blocks were structured as full answers to questions, and if one participant discussed “Excited” in three distinct responses to three different questions, then you would see three video clips of that participant, among the others, who discussed “Excited”.

Examining descriptive statistics can be done at any time. In the HERD project, we only examined descriptive statistics once we had categorized themes and subthemes (as will be discussed in the following “Thematic Folders” section).

Stage 7 – Data analysis within Final Cut Pro X®

Demographic and Geographic Breakdown of Keywords																		
Keyword	Clips		Gender		Age			Location										
	# of People	# of Clips	Male	Female	<30	30-60	60+	Rigolet	Hopedale	Postville	Makkovik	Nain	PHS	St. Lewis	Charlottetown	Cartwright	HVGB	Northwest River
Collective Hunt	8	8	6	2	1	4	3		1		1	3	1			2		
Connection	8	7	5	3		3	5	3					1		2		2	
Continuity	17	16	12	5	3	7	7		3	1	2	3	2		1	2		1
Co-operation	5	6	3	2	1	2	2	1			2	1					1	
Crave	2	2	1	1	1	1					1				1			
Cultural Changes	12	16	7	5	1	8	3	4	1		1	2			2			2
Culture	2	2	2			2						1						1
Cycle	8	8	8			5	3	3			1		1					3
Dependence	6	9	4	2	1	2	3		1		2		1					2
Devastating	1	1	1			1									1			
Disagree with Ban	1	1	1				1	1										
Disconnection	6	5	5	1		3	3		1				2		1	1		1
Doubt	2	2	2			1	1	2										
Dream	2	4	1	1	1	1	1											2
Ecological Functions	2	3	2			1	1	1										1
Economics	8	8	7	1		6	2	2			2		2					
Eating	7	8	6	1		3	4	2			1	2				1	1	
Elders	3	2	1	2	1	1	2	2										1
Emotional	2	3	1	1	1	1					1	1						
Ethical Wild Food	1	1	1				1										1	
Excited	23	31	20	3	3	13	7	2	4	3	3	3	1	2	4	4	4	
Explain to Others	20	27	15	5	1	14	5	3			2	2	1		3	1	6	2
Family	6	9	4	2	1	2	3		1		2		1				2	
Fear	1	1	1			1			1									
Feelings for Caribou	15	13	11	4	3	11	1	2	3	1	2	2				4		1
First Food	3	3	3			2	1	1								1		1
First Hunt	26	29	18	8	4	14	8	3	4		3	3	2		3	1	6	1
Food	7	9	5	2	1	5	1				1	1	2		1		2	
Frustration	8	8	8			5	3	3			1		1				3	
Future	6	9	4	2	1	2	3		1		2		1				2	
Gender	9	7	5	4		4	5	2	1		1				1		4	
Good Memories	3	3	3			2	1	1								1		1
Ground Moving	26	29	18	8	4	14	8	3	4		3	3	2		3	1	6	1
Hard to Believe	7	9	5	2	1	5	1				1	1	2		1		2	
Hard to Explain	8	8	8			5	3	3			1		1				3	
Health	4	5	4			2	2	3			1							
Herd	2	1	1	1	1		1											2
Herd Fusion	5	5	4	1		2	3				1	1	1		2			
History	0																	
Home	1	1	1			1			1									
Hope	6	7	5	1		5	1						1		2	1	2	
Hunting Tools	1	1	1			1												1
Hunting	6	7	6			5	1		1	1	1	1	1		1			
Identity	22	28	15	7	1	12	9	2	2		3	4	1	1	3	1	3	2
Impact	1	1	1				1				1							
Importance	2	2	1	1		2												2

Figure 6: Example of an Excel spreadsheet in the project codebook with the demographic and regional information associated with different keywords. The keyword “Excited” is highlighted.

Thematic Folders

Another option for analysing the data is to use folders to name, group, categorize, and/or collate the codes imported from Lumberjack Builder. Folders are easy to create and name, and useful for organizing keyword collections (i.e. your data). This is particularly helpful for researchers conducting a thematic analysis, or any other approach that groups concepts together.

Themes and subthemes can be organized easily with folders because you can have an unlimited number of folders within each other. For example, we had one folder for “Emotions”, which represented a primary theme, with all data related to any kind of participant-described emotion within this folder (Figure 7 – A). Within this primary theme, we had two additional folders (“Positive Emotion” and “Negative Emotion”) which represented secondary themes (Figure 7 – B). Within these secondary themes we had different Keyword Collections (e.g. “Excited”), which represented the tertiary themes. If we wanted to include further thematic levels, we could have included additional folders to continue breaking these concepts down.

If you re-import the codes from Lumberjack Builder into Final Cut Pro X® at any point, Final Cut Pro X® will automatically update the Keyword Collection within a folder. However, Final Cut Pro X® will also re-create a standalone Keyword Collection outside of your folders. This means that you will have a duplicate Keyword Collection, which should not be problematic for your analysis, but may be confusing for certain situations. Feel free to remove the duplicated Keyword Collection if it gets distracting, knowing that your data will not be lost from the other Keyword Collection within a folder.

Stage 7 – Data analysis within Final Cut Pro X®

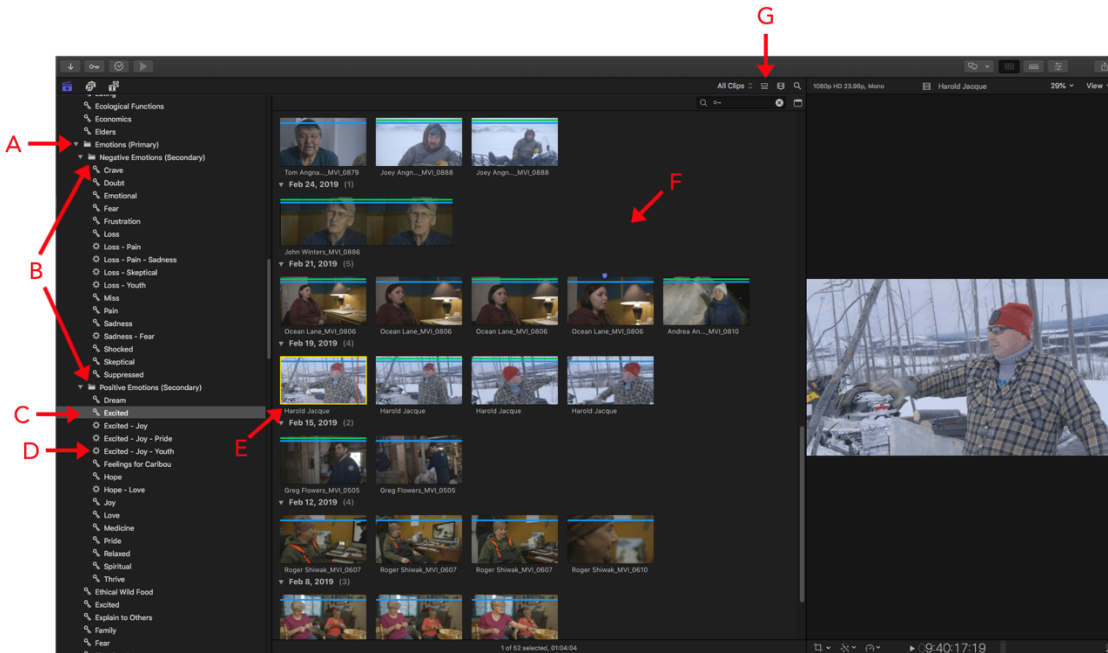


Figure 7: Thematic folders within Final Cut Pro X®

- A. Example of selected folder representing a primary theme (i.e. “Emotions”).
- B. Examples of two selected folders representing secondary themes (i.e. “Negative Emotions” and “Positive Emotions”).
- C. Example of selected keyword collection representing a tertiary theme (i.e. “Excited”).
- D. Example of a selected Smart Collection (i.e. “Excited – Joy – Youth”) embedded within a folder. Smart Collections are represented by a gear icon, rather than a folder icon.
- E. Selected video clip displayed in viewer.
- F. Video clips found within the “Excited” keyword collection (i.e. the video clips that were coded with the keyword “Excited”).
- G. Clip display as either filmstrip or list mode (filmstrip mode on in this figure).

Smart Collections

What is a Smart Collection?

Smart Collections are a powerful tool to analyse relationships between and among your data within Final Cut Pro X®. Although Smart Collections may look similar to folders, their role is different because they are not grouping metadata together. Instead, Smart Collections can be thought of as a search and gathering tool. They search for metadata across your Library that match a manually inputted search criteria and collate this metadata into one place. So, video clips shown in a Smart Collection are not duplicates, they are just filtering for existing video clips across the Library.

Stage 7 – Data analysis within Final Cut Pro X®

Smart Collections are visually represented by a “gear” icon (Figure 7 – D), and can be embedded within a folder, or within your interview Event, or compiled within an entirely separate folder or Event. In the HERD project, we used Smart Collections within folders in our Interview Event (Figure 7 – D), as well as within a specific Smart Collections folder outside of this Event (Figure 9 – A).

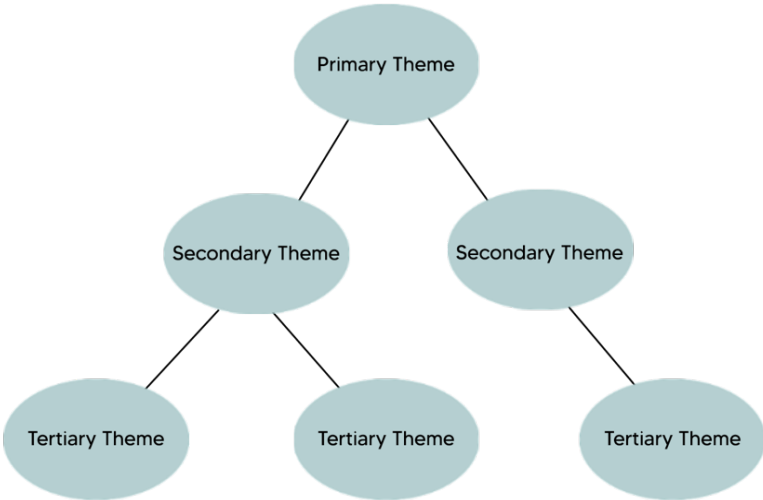
From a video-editing standpoint, Smart Collections are useful because they search for specific connections across large amount of video content, which can help with both content management and the creative storytelling process of multimedia content.

Using Smart Collections to explore data: not messy, but meshy

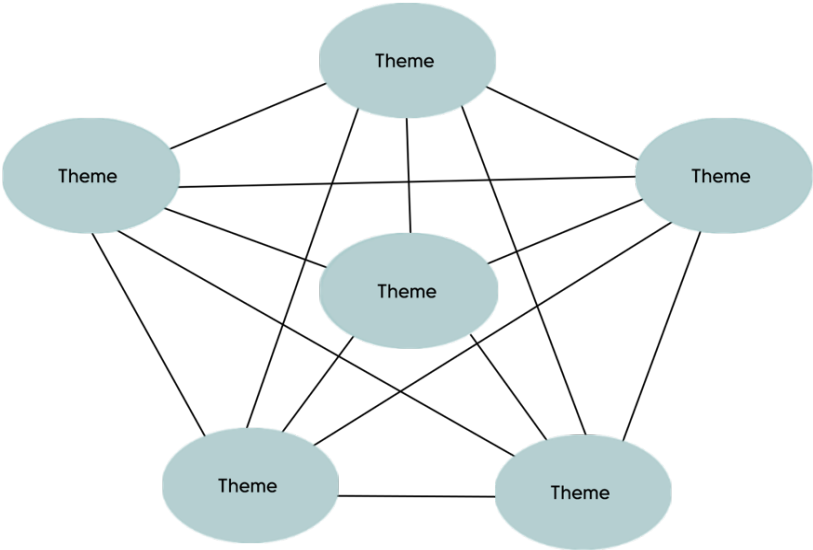
Qualitative data, in the form of human experiences and knowledge, can be abstract, complicated, uncertain, and messy to understand (Green & Thorogood, 2004). A common approach among qualitative researchers has therefore been to categorize data into organized groups (i.e. themes and subthemes) that help to make sense of this information (see “Thematic Folders” section above). While grouping data is an appropriate and powerful strategy for many studies, this method can compartmentalize your data, which might limit the ability to search for and explore other connections across the dataset.

Smart Collections are a tool that can be used to explore your data in ways that are less compartmentalized. Through this tool, keywords can be left as individual concepts that have unique relationships with other keywords across your complicated dataset. **Smart collections can therefore support researchers in thinking about their dataset not as a mess, but as a mesh (Figure 8).**

Stage 7 – Data analysis within Final Cut Pro X®



A) Folder approach for data analysis



B) Smart Collection approach for data analysis

Figure 8: Two different approaches for analysing qualitative data. A) Folders, which can be used to group data together based on similar characteristics; and B) Smart Collections, which can be used to search for connections between keywords and text across the dataset (i.e. Library).

Stage 7 – Data analysis within Final Cut Pro X®

In our experience, thinking about keywords as part of a mesh of knowledge had an important effect on how we analysed the data and made sense of this information. For example, once we had coded all of the interviews at the end of Stage 3, we had a long list of keywords representing ideas. One keyword that we coded for was “sharing”, as many participants had talked about sharing food and knowledge with each other. Sharing was understood as a social activity and was therefore categorized as a subtheme within the larger “Social Connections” primary theme.

Although grouping this single concept within another larger concept was likely accurate (i.e. sharing is indeed a form of social connection), it may not have told the full story. This is because “sharing”, as a concept, has connections to many other aspects of the dataset, and can be understood in ways beyond a social connection. For example, “sharing” might have a unique relationship with many other concepts discussed by participants, from food security to mental health. However, we felt that the process of categorizing “sharing” within a single primary theme discouraged us from exploring other relationships that may be less obvious to us. Especially as settler researchers coming to this work, the process of categorizing and grouping keywords was largely influenced by our preconceived notions of what relationships might exist between concepts, and what kinds of relationships made sense to us.

Smart Collections, on the other hand, allowed us to search for the variety of relationships between concepts in an inductive way. “Sharing” was looked at as one concept in the mesh of knowledge and was therefore searched for in connection to many other concepts that participants discussed, such as “Culture”, “Food”, and “Youth” (Figure 9 – A, E). This helped us to decompartmentalize “Sharing” and explore the nuanced ways that this concept was intertwined with other concepts, of which we may not have been able to do if solely focused on a strategy of grouping and categorizing.

Depending on your dataset, there could literally be a countless number of keyword relationships to explore because of all of the possible search criteria combinations (see

“Filter tool” section below). Smart Collections therefore present an opportunity to investigate your dataset in ways that let the data drive the analysis.

Filter tool

The mechanics of creating Smart Collections are centred around the use of a single feature in Final Cut Pro X®: the filter tool. The filter tool is used to input search criteria, which searches across your entire Library for specific metadata that matches your search criteria. Searchable metadata includes:

- Text
- Ratings
- Media type
- Type
- People
- Date
- Roles
- Keywords
- Used media
- Format information

Although some of this metadata may be irrelevant for your qualitative analysis, we found that the ability to filter keywords was notably useful, and so the Smart Collections we created focused on relationships between keyword collections (Figure 9 – A).

Essentially, this allowed us to explore what keywords were discussed in combination with other keywords (i.e. what themes were discussed together by participants), which was insightful for determining relationships between themes. Additionally, we filtered by text (Figure 9 – J), which allowed us to search for specific words or sentences across the dataset.

Importantly, analysing relationships between different keywords is dependent upon how text-blocks were structured back in Stage 3 (Generating Codes). As discussed in Stage

3, our approach was to structure text-blocks as full answers to questions, which meant that all of the surrounding data was kept intact, and the context associated with the data was not lost. Consequently, multiple codes were attached to larger text-blocks. If you are structuring text-blocks as full answers to questions, the downside of this approach is that a code could be applied to a large text-block, but only relate to a smaller section of that text-block. This must be taken into account when thinking about which themes are being talked about together.

There are multiple ways of creating Smart Collections. The following is an example of the steps that we took to create a single Smart Collection, with the use of the filter tool:

- 1) Right-click on the folder or Event that you want to add a Smart Collection in and select “New Smart Collection”.
- 2) Name the Smart Collection in a way that shows which keywords are going to meet the search criteria for that Smart Collection (see “Naming Smart Collections” section below). For this example, we created the “Sharing – Culture” Smart Collection (Figure 9 – A).
- 3) Double click on the Smart Collection to pull up the filter tool. Add “keywords” from the metadata drop-down selection menu (Figure 9 – J). A list of all keywords that have been developed in Stage 3 should now be shown in the filter tool. Select the “uncheck all” option (Figure 9 – H).
- 4) There is an inclusion criteria menu for filtering keywords (Figure 9 – F), which is similar to a Boolean search. Select the ‘include all’ option, which means filtered video clips *must* be linked to *all* of the keywords selected in the search. This option is selected so that video clips will only be visible if they included all keywords selected in the filter. The remaining options are: ‘include any’, which means filtered video clips are linked to *one or more* of the keywords selected in the search; ‘does not include any’, which means filtered video clips *are not* linked to *one or more* of the keywords selected in the search; and ‘does not include all’, which means filtered video clips *must not* be linked to *all* of the keywords selected in the search.

Stage 7 – Data analysis within Final Cut Pro X®

- 5) Select two or more keywords that you want to explore in connection with each other. For example, for the “Sharing – Culture” Smart Collection, we selected the keywords “sharing” and “culture” (Figure 9 – E). Once these two keywords were selected, *only* video clips that were coded for *both* “sharing” and “culture” were shown in the browser (Figure 9 – C). Given that video clips represent text-blocks, and text-blocks were structured as a participant’s full answer to a question, we can see which participants discussed the concepts of “sharing” and “culture” in the same answer to a question. Throughout this stage, there is also an opportunity to continue to examine and document the descriptive statistics related to the data (see “Descriptive Statistics” section above).

Note that if a new video clip matches the Smart Collection’s search criteria, or if an existing clip is recoded to match the search criteria, then that video clip is automatically included into that specific Smart Collection.

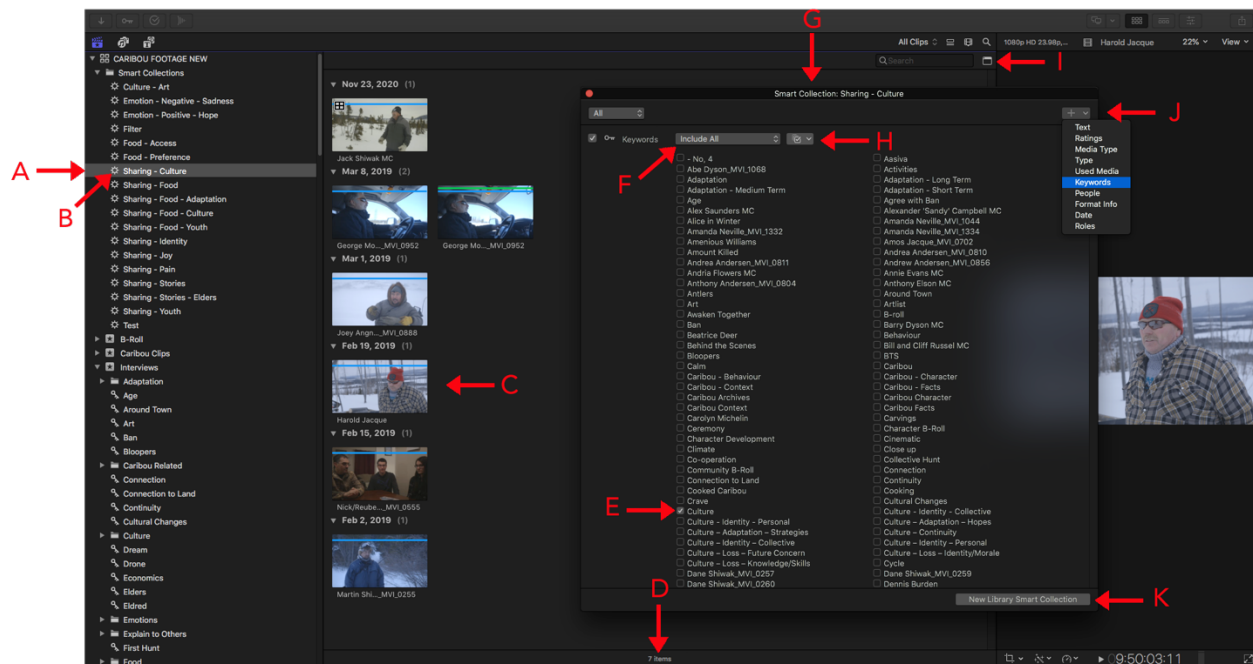


Figure 9: Smart Collection within Final Cut Pro X®, with filter tool showing.

- A. Example of selected Smart Collection (i.e. Sharing – Culture) within a specific folder dedicated to Smart Collections.
B. Gear icon representing Smart Collection.

Stage 7 – Data analysis within Final Cut Pro X®

- C. Video clips meeting search criteria within the Smart Collection, shown as filmstrips in the browser.
- D. Information regarding how many clips meet search criteria within Smart Collection.
- E. Example of selected keyword (“Culture”) in filter tool (i.e. the search criteria). “Sharing” was also selected but cannot be seen in this figure due to alphabetical ordering.
- F. Inclusion menu for filtering keywords.
- G. Filter tool displayed as a pop-up window.
- H. Menu for checking or unchecking all keywords.
- I. Open/close filter tool.
- J. Metadata drop-down selection menu (with keywords selected).
- K. Option to create new Smart Collection based on search criteria within the filter.

Naming Smart Collections

Smart Collections, like folders, can be named in any way that fits a given research project. For the HERD project, the way that we named a Smart Collection was a vital part of understanding the data within it.

Our approach was to name Smart Collections based on the individual keywords that were included within them. Each keyword was separated by a dash, which represented the connection between the keywords:

Keyword — Keyword — Keyword

For example, one Smart Collection we created looked like this (see Figure 7):

Excited — Joy

The search criteria for this Smart Collection therefore included the keywords “Excited” and “Joy”, meaning that **only** video clips where participants mentioned both “Excited” and “Joy” in the same answer to a question were included in this Smart Collection.

Through this smart collection, we were able to explore the ways in which participant feelings of excitement were connected to participant feelings of joy. Both “Excited” and “Joy” were considered tertiary themes (within the secondary theme of “Positive Emotions”, which was embedded in the primary theme of “Emotions”).

Another example of a Smart Collection we created looked like this (see Figure 7 – D):

Excited — Joy — Youth

Similarly, the search criteria for this Smart Collection included the keywords “Excited” and “Joy”, but also “Youth”. Through this Smart Collection, we were able to explore the relationship between participant feelings of excitement and joy, and how those emotions were connected to participant discussions of youth. While “Excited” and “Joy” were considered tertiary themes, “Youth” was recognized as an entirely different primary theme altogether. We were therefore able to explore connections both between *and* among these themes.

Summary

- There are multiple pathways to analyse data in Final Cut Pro X®, including descriptive statistics, thematic folders, and Smart Collections.
- You can manually track descriptive statistics for a variety of demographic and geographic information and keep track of this information in the project codebook.
- Folders are helpful for grouping, categorizing, and collating concepts together, and are therefore practical to use for a thematic analysis.
- Smart Collections are not folders, but a tool to search and filter through the data you coded, including by keywords and text.
- Smart collections can support researchers in thinking about their dataset not as a mess, but as a mesh.
- When naming Smart Collections, it is helpful to use a *Keyword — Keyword — Keyword* structure.

Stage 8

Writing, video-editing, and data-visualization

The purpose of this stage is to begin (or continue) making use of the video-based data and content that you have worked to analyse so far. Although we discuss some options in the writing, video-editing, and data-visualization processes of your work, feel free to experiment with this content in new ways!

Writing

When writing up your qualitative findings to communicate to readers of your work, you can make use of the visual dimensions of the data by providing contextual descriptions. Rather than just describing what participants said, you can make use of the visual information surrounding the data to lay out how the context of the interview contributed to the creation and sharing of ideas and knowledge. This strategy can complement the qualitative data communication process by providing a more in-depth description of the events that led up to what the participant said, or maybe what happened afterwards. With certain quotes, it was effective to state where the participant was and what they were doing. For example, in one article (Borish et al., n.d.:15) we shared the following:

While being filmed looking at photos of past caribou hunting trips with his son, an adult male echoed this challenge, saying “it’s a big link...missing now. Like a gap. So how are the younger ones going to know about it, I don’t know.” His son, a youth in his teens who had never before gone caribou hunting, discussed his vision of what the experience might look like....

Essentially, there is a lot of visually documented information in the filmed interviews, such as the physical surroundings, the actions and activities of participants, participant body language, and the relationships among participants. Try experimenting with different ways of incorporating this visual information into your writing, as it might present more depth and understanding for readers.

Video-editing

Video-editing is really an iterative and ongoing process, as you would have been thinking about the storytelling dimensions of your work throughout the previous 9 stages. There isn't a whole lot we can say about video-editing, as that is largely a creative process that will depend on what stories you are trying to tell, how you are telling them, and for whom these stories are for. For specific advice on how to edit documentary videos, films, and other multimedia content, we recommend looking to our "suggested readings" section (Appendix A). That said, one opportunity that a video-based qualitative analysis provides for the video-editing and storytelling process is the ability to carry out **data-driven editing**, and therefore produce data-driven films.

For documentary films that are not research-based, having large amounts of codes attached to the footage may be impractical for storytelling purposes. This is, in part, because documentary films without a research focus don't necessarily need to dissect and organize every concept or idea that a participant may discuss. For example, the ~120 keywords that we attached to the video interviews — which were all critical for the analysis — would likely have been excessive if we were solely making a storytelling output. With a video-based qualitative analysis, a more in-depth look at the interview footage was carried out because the footage was considered to be the data that will be analysed as part of the qualitative inquiry. Considering the in-depth coding and analysis of the data needed to take place for research purposes anyways, there was an opportunity to allow the data to influence what information was conveyed in the documentary film. Although we had pre-conceived ideas on what concepts and storylines may have been communicated in our documentary film's narrative, the in-depth coding process highlighted new and alternative concepts that influenced the structure and complexion of how the story was going to be told. In this way, it was possible to create a film that was data-driven, and therefore directed, at least in part, by the collective evidence being described by the subjects of the film.

Data-visualization

Stage 8 – Writing, video-editing, and data visualization

With a video-based qualitative analysis, there are also opportunities to visualize data in new ways, such as the creation of **PhotoGraphs**. This visualization strategy uses a bar graph to present findings that were derived from the video-based qualitative analysis. However, rather than the graph being built up by data points, the graph is constructed from portrait photos (or screenshots of the video interviews), which represent the individuals who discussed the concepts shown in the graph. The data is therefore connected to each individual on a personal level and communicated in an engaging way. For example, we used a PhotoGraph to link participants with their knowledge and visualize relationships between different concepts (as undertaken in Stage 7) in a paper about Inuit culture and caribou (Figure 10), and a paper about Inuit social connections and caribou (Figure 11).

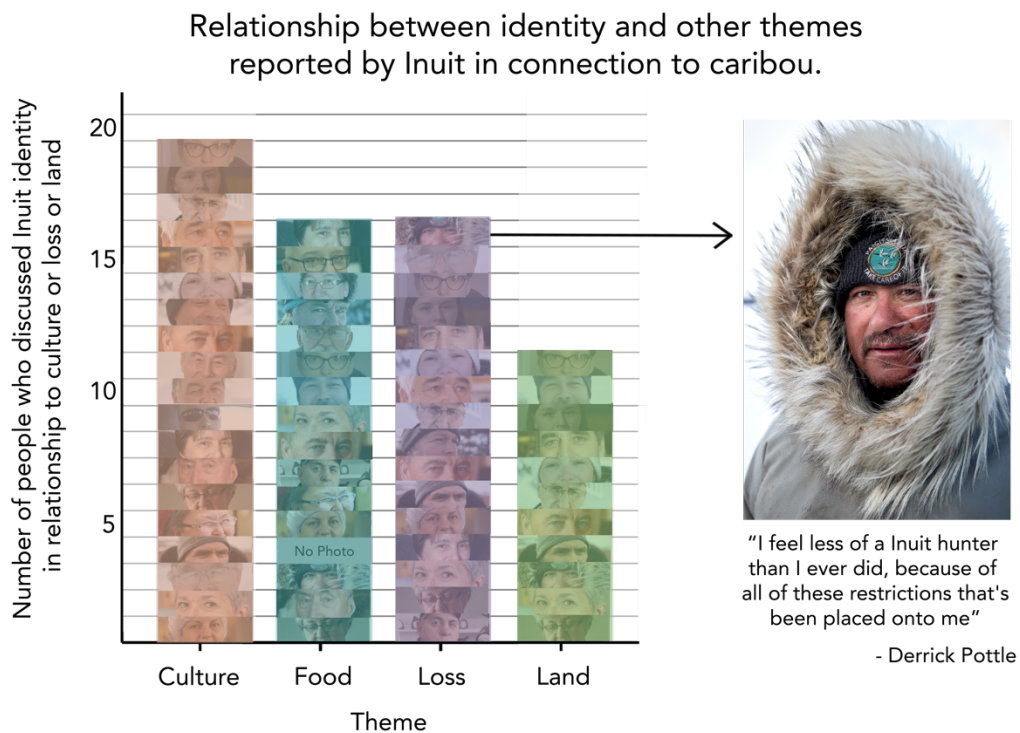


Figure 10: An example of a PhotoGraph, used in Borish et al. (2020a).

Stage 8 – Writing, video-editing, and data visualization

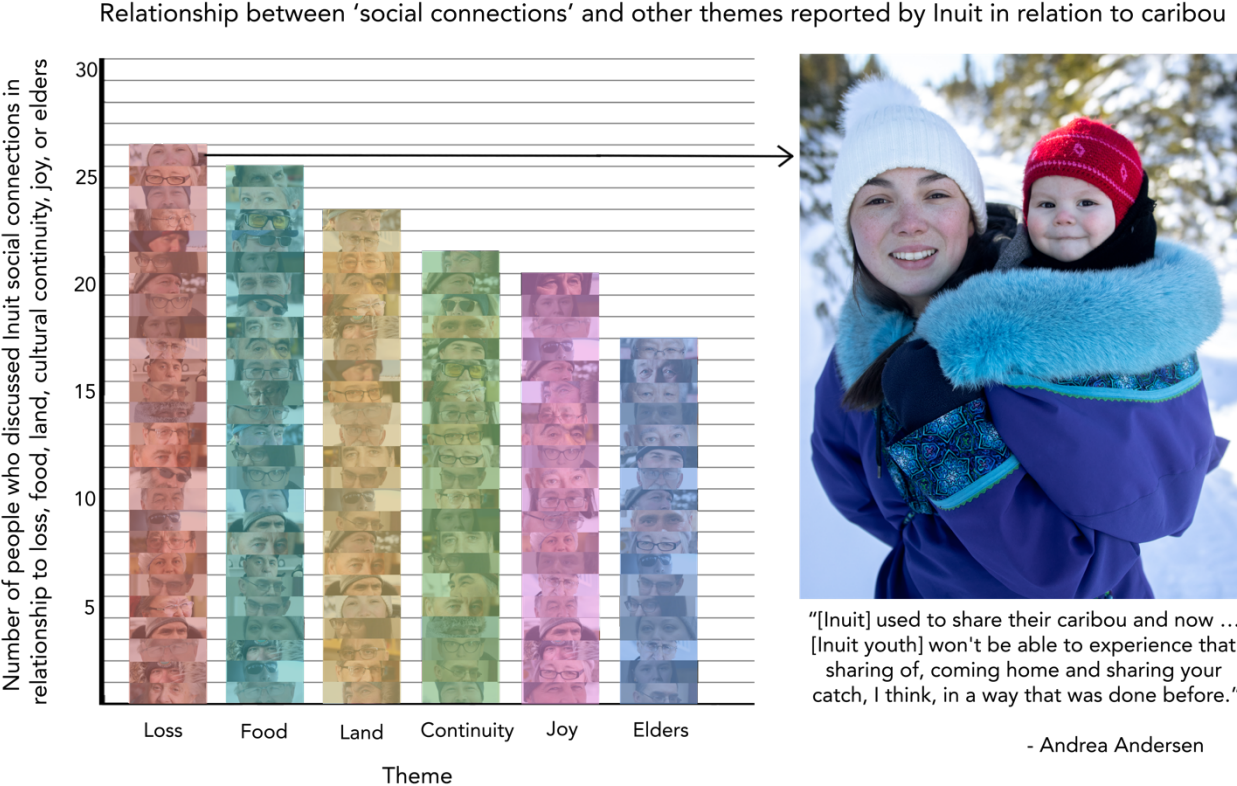


Figure 11: An example of a PhotoGraph, used in Borish et al. (2020b).

Conclusion

This 'how-to' guide has gone step-by-step through the process of undertaking a video-based qualitative analysis (Figure 1). Stage 1 starts with organizing a workflow across the required softwares; Stage 2 is focused on transcribing the filmed interviews and becoming familiar with the data; Stage 3 looks to create codes that represent concepts, features, and characteristics in the data; Stage 4 works to organize and build themes and storylines across the dataset; Stage 5 looks to sort and collate codes into distinct groups by creating themes and subthemes; Stage 6 transfers all the codes from Lumberjack Builder into Final Cut Pro X[®]; Stage 7 is focused on analysing and exploring your data through descriptive statistics, thematic folders, and Smart Collections; and Stage 8 presents opportunities to use the video-based data for writing, video-editing, and data visualization.

With increasing interest to integrate video into the research process — and ultimately incorporate more effective knowledge mobilization techniques — new demands are being placed on methodological strategies for merging visual media and research interests. A video-based qualitative analysis is one such strategy, entirely focused on creating both storytelling and analytical outputs through a simultaneous and consolidated procedure. The application of a video-based qualitative analysis is wide-ranging and can be used by anyone who's aim is to create in-depth analytical outputs, as well as creative and engaging storytelling outputs from the qualitative data that they collect. The use of this analytical approach may therefore support the communication of important findings to those sitting both within and outside the walls of academia.

Reference List

- Bassett, R. (2011). Visual conceptualization opportunities with qualitative data analysis software. In E. Margolis & L. Pauwels (Eds.), *The SAGE Handbook of Visual Research Methods* (pp. 1–27). London: Sage Publications Ltd.
- Borish, D., Cunsolo, A., Snook, J., Shiwak, I., Wood, M., HERD Caribou Project Steering Committee, ... Harper, S. L. (n.d.). "Caribou was the reason, and everything else happened after": Inuit identity, cultural continuity, and caribou declines in Labrador, Canada. *Global Environmental Change*, 1–35.
- Borish, D., Cunsolo, A., Snook, J., Shiwak, I., Wood, M., Project, C., ... Bay, G. (n.d.). "It's just a sense of home": Inuit social connections and caribou declines in Labrador, Canada., 1–34.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Cunsolo, A., Borish, D., Harper, S. L., Snook, J., Shiwak, I., Wood, M., & The Herd Caribou Project Steering Committee. (2020). "You can never replace the caribou:" Inuit experiences of ecological grief from caribou declines. *American Imago*, 77(1), 31–59.
- Derry, S. J., Pea, R. D., Barron, B., Engle, R. A., Erickson, F., Goldman, R., ... Sherin, B. L. (2010). Conducting video research in the learning sciences: Guidance on selection, analysis, technology, and ethics. *Journal of the Learning Sciences*, 19(1), 3–53. <https://doi.org/10.1080/10508400903452884>
- Goldman, R., Pea, R., Barron, B., & Derry, S. J. (2006). *Video research in the learning sciences*. New York: Routledge.
- Green, J., & Thorogood, N. (2004). *Qualitative methods for health research*. London, UK: Sage Publications.
- Hampe, B. (2007). *Making Documentary Films and Videos: A Practical Guide to Planning, Filming, and Editing Documentaries*. (Second Edi). New York, NY: Holt Paperbacks.
- Heath, C., Hindmarsh, J., & Luff, P. (2010). *Video in qualitative research: Analysing social interaction in everyday life*. SAGE.
- Jewitt, C. (2012). *An introduction to using video for research*. National Centre for Research Methods Working Paper. London, UK.
- Kissmann, U. (2009). *Video interaction analysis: Methods and methodology*. Frankfurt: Peter Lang GmbH. Retrieved from

https://s3.amazonaws.com/academia.edu.documents/42880372/Kissmann_Kapitel_Videobuch.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1527882701&Signature=X%2F5pN42N8k4vHbVVKeZG%2BOTeKuc%3D&response-content-disposition=inline%3B filename%3DHow_medical_for

- Knoblauch, H., Schnettler, B., Raab, J., & Soeffner, H.-G. (2006). *Video analysis: Methodology and methods - Qualitative audiovisual data analysis in sociology*. Frankfurt: Peter Lang GmbH.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* ((2nd ed.)). Newbury Park, CA: Sage.
- Pea, R. (2006). Video-as-data and digital video manipulation techniques for transforming learning sciences research, education, and other cultural practices. In J. Weiss (Ed.), *The International Handbook of Virtual Learning Environments* (pp. 1321–1393). Amsterdam, Netherlands: Springer.
- Pea, R., & Lindgren, R. (2008). Video collaboratories for research and education: An analysis of collaboration design patterns. *IEEE Transactions on Learning Technologies*, 1(4), 235–247. <https://doi.org/10.1109/TLT.2009.5>
- Petrarca, D. M., & Hughes, J. M. (2014). Mobilizing knowledge via documentary filmmaking - Is the academy ready? *McGill Journal of Education*, 49(3). Retrieved from <http://mje.mcgill.ca/article/viewFile/9074/7009>
- Snell, J. (2011). Interrogating video data: Systematic quantitative analysis versus micro-ethnographic analysis. *International Journal of Social Research Methodology*, 14(3), 253–258. <https://doi.org/10.1080/13645579.2011.563624>
- Tuckett, A. (2005). Applying thematic analysis theory to practice: A researcher's experience. *Contemporary Nurse*, 19, 75–87.