Challenges in designing learnable UI for crowdsourced content

Alex Parmentier

What is the ELVIS Database?

A website where *anyone* can browse, search, download, and contribute to a database of **symbolic music** files (.mxl, .mei, etc).

A free resource for music researchers to easily find exactly the data they need in the format the need, and to share their own files.

ELVIS Project: A project spearheaded by McGill University with the stated goal of applying ‘big-data’ techniques to music. This means...

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Designing a database website.

Where is the information going to come from?

Who is the site designed to be used by?

What kind of rules should we have about cataloging our data?

What kind of ways can our users search for data?

How should we structure data which depends on other data?

Designed a database website.

Where is the information going to come from? **Anywhere**.

Who is the site designed to be used by? **(Almost) anyone**.

What kind of rules should we have about cataloging our data? **Lots**.

What kind of ways can our users search for data? **Also lots**.

How should we structure data which depends on other data? **It's complicated.**

Open and Crowdsourced.

Open: Anyone can search and download files, and even view source code.

Crowdsourced: All content is provided by users.

When combined, these design choices impose a huge challenge in designing a learnable UI.

We want *as many* people to contribute as possible, so we must design an interface that can be used by people with widely varying skillsets.

Users have different strengths.

Some users will be more comfortable than others using a complicated web app.

Some users will know more than others about conventions for cataloguing music. Even those with a strong musicological backgrounds might disagree with our choices.

Any user is susceptible to making mistakes or misunderstanding the instructions, leading to a frustrating experience, or worse, badly formatted data in the database.

Three issues up for discussion:

1. Creating a way for users to contribute to the site that is easy to use without reading an instruction manual.
2. Representing data to users in a way which complements their mental models.
3. Creating interfaces which are learnable through productive use.

Problem 1: We have (lots of) rules.

We have dozens of rules and conventions about how we want to catalogue pieces.

Even among musicologists, there is disagreement about how this should be done.

Nobody wants to read pages of rules before they’re allowed to do something. Even if they did - no one could be expected to remember all the rules.

Solution 1: Context, constraints, feedback

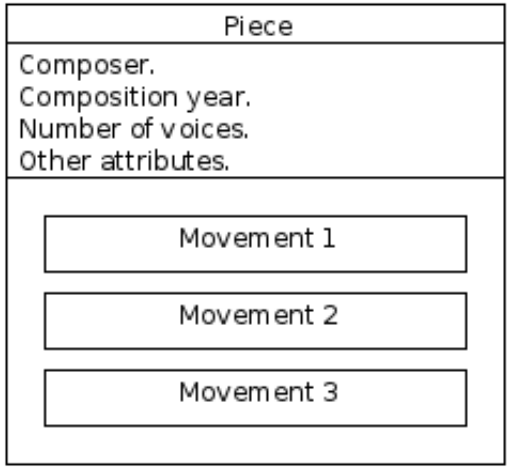
Put the important rules in the context where they are most important.

Use the “power of technology”™ to enforce rules without even telling people about them.

Leave some rules to be discovered only if they are broken - and give feedback in this case.

Be generous (but unobtrusive) in suggesting behaviour.

Problem 2: Mental models.

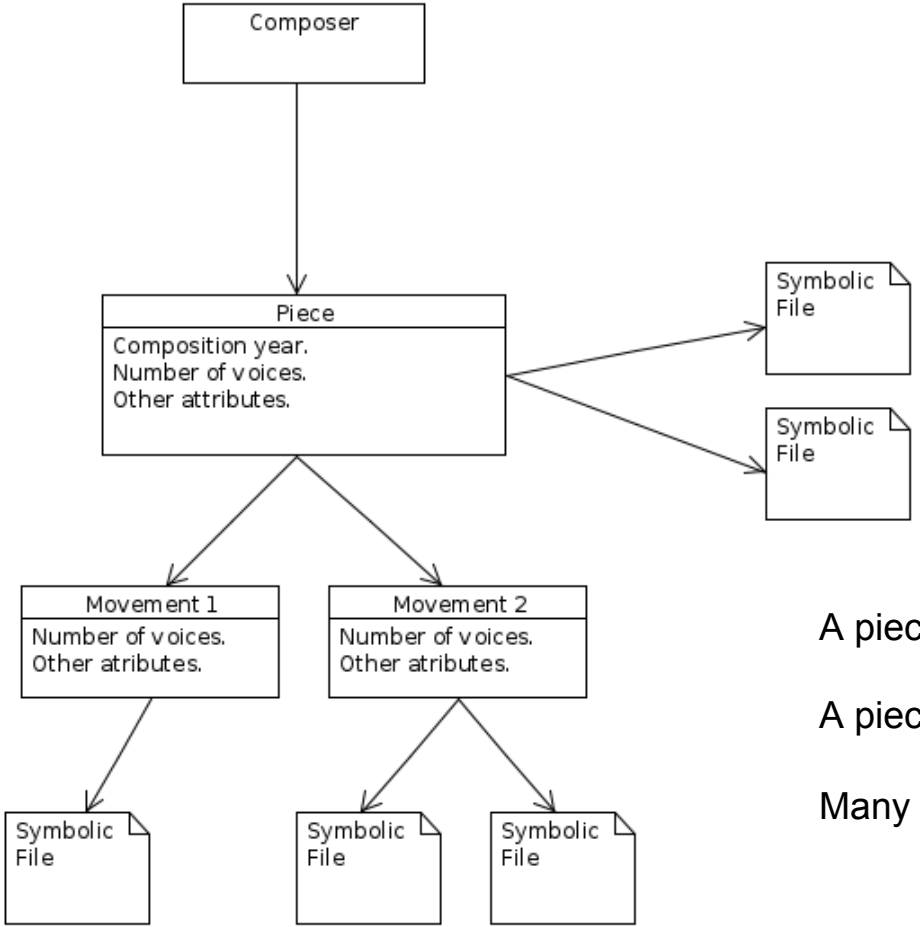


1 piece = 1 idea

Attributes like ‘composer’ are part of a list in the idea.

Movements are a subdivision of the content of the idea.

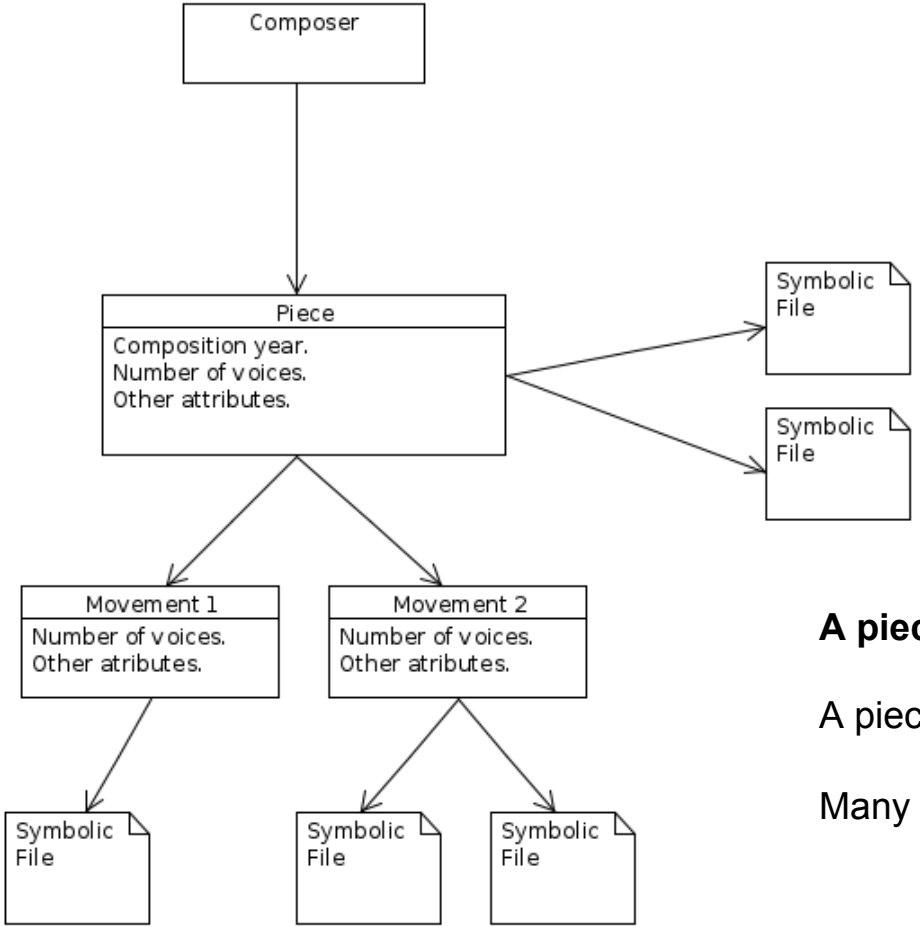
The idea and its representation are closely intertwined.



A piece and its movements are separate entities.

A piece may have multiple representations (files).

Many attributes of the piece are entities of their own.



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Problem 2: Mental Models (cont.)

We need to organize data in a way which is easy to search and slice on many different properties.

Data organized in this way is very different from the human mental model of what a piece of music is.

Exposing the computer-representation of data is more likely to be confusing than enlightening.

Solution 2: Design towards the model.

Hide the fact that the computer is representing data in a very different way.

Design UI that allows easy expressibility in human terms, while retaining unambiguous translatability into system terms.

Attempt to simulate, if only in presentation, the typical mental model of the data.

Problem 3: Learnable interfaces.

Some features, especially if they are powerful, are going to have complicated interfaces.

It’s not always practical or enjoyable to learn how to use a complicated interface.

It’s almost always more enjoyable to start using the feature right away and learn about its advanced features through productive use.

Solution 3: Learnable interfaces.

If the interface must be complex, offer paths to use the feature without a deep understanding of the interface.

Offer instant feedback so users are guided towards the results they desire and a deeper understanding of the interface.

If users can iterate through potential solutions and receive instant feedback, they have the tools to learn the interface through use.

Conclusions

If you have lots of information you need to convey, try to split it up into manageable chunks, and employ multiple methods of conveying it (direct, indirect, or just a nudge in the right direction).

If possible, create paths for users to ‘learn’ information through productive experience, rather than simply dumping it on them.

Try to modify your design in a way that accommodates how people think, rather than trying to teach people a new way to think.

Thank you!

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Société et culture
Québec

What’s already here? How is it spelled?

Problem: There’s lots of things already in the database. There’s lots of different ways to spell the same thing. Even an expert could make a spelling mistake or decide to use a different spelling. If this happens often, the database will be full of duplicated information!

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Solution: Suggestions on every field based on the live state of the database. Suggestions use a ‘fuzzy’ matching algorithm, so even if you start in the wrong place, you can end up in the right place.