

# Mining Drama Patterns in Dramatic Situations

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Drama patterns can be recognized in plays and movies as they are performed, but also in writing, i.e., in dramatic texts, scripts, stories, novels, etc. This process involves extensive text analysis. It requires insight and skill, but this doesn't mean that it exhibits no regularities. This paper brings an approach to collaborative drama pattern mining in dramatic situations based on layered text annotations. The approach is supported by a prototype tool. Two newly identified drama patterns are presented in an example based form. The approach is potentially applicable to all patterns that have some textual manifestation.

Categories and Subject Descriptors: [**Software and its engineering**] Patterns

General Terms: Patterns

Additional Key Words and Phrases: drama patterns, mining, roles, forces, annotations

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## 1. INTRODUCTION

The world of drama is exciting, full of mystery and tension: that's the reason why it attracts people. Consider the scene from Star Wars in which Darth Vader fights with Luke Skywalker. When Luke loses, Darth Vader offers him to join his side. Luke refuses and they have an argument during which Darth Vader reveals to Luke that he is his father. This shatters the whole Luke's world, but he cannot accept the offer. In *The Hunchback of Notre-Dame*, Frollo, who was responsible for imprisoning Esmeralda, offers her salvation, revealing her that he actually loves her. Realizing she cannot give her love to such a man, Esmeralda refuses this offer.

Centuries and light years away from each other, these two scenes exhibit the same proven, intriguing dramatic situation: the same *drama pattern*. The context is different, but the roles of an advantage bearer and disadvantaged one, the contradicting forces between them, such that *despite being enemies, the advantage bearer offers help to the disadvantaged one*, and the resolution that reveals that help comes at a *price incompatible with the nature of the disadvantaged one* are essentially the same. However, nothing disrupts uniqueness of either of these two instances of the same drama pattern that we call *Helping Enemy* (see Appendix A.1 for a full description).

As it is with beautiful buildings, good drama plays and movies are full of patterns [Vranić and Vranić 2019]. As with buildings, patterns enable the same kind of natural and creative piecemeal growth. As with Alexander's building architecture patterns [Alexander 1979], each of which generates a building architecture artifact as a resolution of the conflict of the contradicting forces in a given space, each drama pattern generates a dramatic element as a resolution of the conflict of the contradicting forces in a given dramatic situation. An example of such a dramatic element is the price in the *Helping Enemy* drama pattern, but it also may be an emotion expressed by an actor (see Section 2.2 and Appendix A.2).<sup>1</sup> Here, to generate a dramatic element means to guide those who

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<sup>1</sup>Thanks to Richard P. Gabriel for revealing this during a discussion about the shepherding version of this paper.

are building a particular scene to construct and introduce that dramatic element where it's needed. This may be done by a director collaborating with actors or by the actors alone working as a team, but also by a playwright working on a play.

In other words, as has been observed in their daily application by Aleksandra Vranić [Vranić and Vranić 2019], drama patterns do not instruct actors how to behave step-by-step, but put them into a position that through contradicting forces squeezes out of them the necessary performance, i.e., they make the participants express what is appropriate in a given situation, which is the same as with Alexander's building architecture patterns that do not explain how to make a building brick by brick.

Drama patterns have shown to be a highly effective means of teaching children drama, with the teaching process always ending up with a quality performance in front of the audience [Vranić and Vranić 2019]. Drama patterns were even used to prepare a short dinner play within a focus group at EuroPLoP 2019, which took only 75 minutes along with the discussion of the drama patterns as such [Vranić et al. 2019].

Sixteen drama patterns successfully used in practice have already been reported [Vranić and Vranić 2019; Vranić et al. 2020], and this paper brings additional two of them (see Appendix A). These pattern descriptions are intended to inspire and not to prescribe. For this, we introduce them in the example based pattern form [Vranić and Vranić 2019]. The key feature of this form is that the context part of the pattern is exemplified rather than being presented in general terms. This is in accordance with Alexander's idea that a pattern language has to be adapted to a particular context before it is being applied, including adapting pattern descriptions [Alexander et al. 1977]. With respect to this, different versions of pattern descriptions should be allowed to coexist.

Drama patterns can be recognized not only in plays and movies as they are performed, but also in writing, i.e., in dramatic texts, scripts, stories, novels, etc. This process involves extensive text analysis. It requires insight and skill, but this doesn't mean that it exhibits no regularities. This paper exposes the regularities of the drama pattern mining process and brings a tool support to make it easier.

The rest of the paper is structured as follows. Section 2 exemplifies the drama pattern mining process. Section 3 explains working with drama pattern instances as layered text annotations. Section 4 treats the collaboration aspects of the process. Section 5 demonstrates the drama pattern mining prototype tool developed to support the process. Section 6 relates the approach proposed in this paper to other work. Section 7 concludes the paper.

## 2. IDENTIFYING DRAMA PATTERNS

As an example play, we studied *Soul Beat* (in Slovak, the original title *Tlkot (d)uší*), a play performed by DaMDS EVA, a children and youth theater group (directed by Eva Matysová, Dagmar Štekláčová, and Oľga Šimašková), in which one of the authors of this paper (Patrik Honíšek) took part. The play is based on *The Hunchback of Notre-Dame*, the famous Victor Hugo's novel.

While studying the recording of the play, we started noticing some of the documented drama patterns [Vranić and Vranić 2019]. The most promising scenes were played repeatedly to ensure whether they represent drama pattern instances we thought they did.

Some scenes resembled existing drama patterns, but they differed a little bit from their description. For example, the relationship of Quasimodo and Esmeralda in the play firstly appeared to us as *Impossible to Be Together* [Vranić and Vranić 2019], but after a closer look, we noted a divergence from this pattern: Esmeralda likes Quasimodo but doesn't love him as he loves her (we did not close this case as a newly identified drama pattern yet).

For each new pattern, we wrote down its short description in terms of the scene it came from. In fact, the pattern descriptions were more general than the scenes, trying to grasp the essence of the characters involved in the scenes rather than just refer to them by their actual names.

### 2.1 Elaborating Drama Pattern Descriptions

Recall the scene from *Star Wars* we mentioned in the introduction, in which Darth Vader calls upon Luke Skywalker to join the dark side and which came to be the *Helping Enemy* drama pattern (see Appendix A.1 for a full

description). It might be interesting to note that the working name of this pattern was *Join the Dark Side, Luke*. While such scene specific names can be attractive, more general names are better at expressing the intent of the pattern.

But how this pattern was actually extracted and generalized? Well, by making *generalized observations* regarding the scene, such as:

- (1) Two opposite characters meet
- (2) One character is in advantage over the other
- (3) The character with advantage offers help to the one in need
- (4) Help comes with a price
- (5) The price of help is incompatible with the beliefs and nature of the character in need

These generalized observations give us pattern roles: the character with advantage is the *advantage bearer* and the one in need is the *disadvantaged one*. Also, we may read forces from them: despite being enemies, the advantage bearer offers help to the disadvantaged one. And the solution is there, too: help comes at a price incompatible with the nature of the disadvantaged one.

Let's see how these generalized observations apply to our play. Frolo is an older, bitter priest, intriguer, and killer. Esmeralda is a young Gypsy, full of life and light, always happy and dancing on the streets of Paris. The characters in the scene are the exact opposite to each other, so the first generalized observation is fulfilled. Here is their dialogue:

**Esmeralda:** Who are you?

**Frolo:** Priest. Are you ready, Esmeralda?

**Esmeralda:** For what?

**Frolo:** Death!

**Esmeralda:** Will it be soon? *[with hope]*

**Frolo:** Tomorrow.

**Esmeralda:** That's a long time. Can't they do it right now?

**Frolo:** Are you very desperate?

**Esmeralda:** I'm cold.

...

**Frolo:** Ah, miserable one! *[grabs her by the hand]* Come with me then!

**Esmeralda:** Your hand is freezing, like death. *[whispers]* Who are you actually? *[Frolo lifts up his hood and Esmeralda looks at him in horror]*

**Esmeralda:** You, you are the phantom that brought me here, taking me from one disaster to another till here, under gallows.

...

**Esmeralda:** I recognize you, you are the priest that forever extinguished my sun, my Phoebus.

From their dialogue, The *Helping Enemy* drama pattern roles can be assigned to the characters: Frolo is the advantage bearer and Esmeralda is the disadvantaged one. This fulfills the second generalized observation.

The dialogue continues:

**Frolo:** Oh heavens. What have you done to me? My eyes are full of fires, like eyes of buzzard that circle around poor lark, chasing its prey until it holds her in the grasp of death. But is unable to tear her up, to gobble!

**Esmeralda:** What have I done to you? You hate me! What have you against me?

**Frollo:** Listen! I will tell you what I have been afraid to tell myself when I was secretly questioning my conscience, in the deep late nights when the world out there is full of darkness it almost seems that God doesn't see us. I love you!

**Esmeralda:** That can't be true!

**Frollo:** Do you hear me? I love you! [*shouts with wild flickering eyes*]

...

**Frollo:** Please touch me. Please come with me and my love will be everlasting!

**Esmeralda:** What kind of love is that?

**Frollo:** The love of the doomed one.

As a man of clergy, Frollo is able to save Esmeralda from the death sentence and he, indeed, offers her help. This fulfills the third generalized observation. In the end of the scene, Frollo reveals the reason why he wants to help Esmeralda. The price for Esmeralda's salvation would be her love. But it would be impossible for her to love somebody who killed the man she truly loved in pursuit for her. This fulfills the last two generalized observations.

Once the points were mapped in the script and the roles were assigned there was need to think about the forces that actually make this pattern necessary to use. The contradicting forces were found in the generalized observations because one generalized observation says that the characters are opposite to each other in beliefs, attitudes, etc., while another generalized observation says that one character offers help to the other one. These are the forces that create the opportunity for this pattern to happen. The pattern then resolves this imbalance by fact that help comes at a price that is against the nature of the disadvantaged one.

## 2.2 Untangling Drama Pattern Compositions

Besides the prison scene discussed in the previous section, we observed another instance of the *Helping Enemy* drama pattern: in the scaffold scene Frollo once more—and for the last time—calls upon Esmeralda to run away with him promising he would save her right there on the gallows just seconds before her death.

An interesting thing to observe is that, although these two scenes realize the same pattern, somehow the prison scene is more powerful than the scaffold one. The answer to this was found after performing a more thorough analysis of the prison scene script. It turned out it contains another pattern in composition with *Helping Enemy*: the *Devastating Truth* pattern. Frollo's offer to help Esmeralda and his strange behavior is explained by his secret love to her and for her, which is completely shocking to her. Frollo acts as a truth holder, while Esmeralda is a truth receiver. The truth holder expresses the truth to the truth receiver, but this does not correspond to the truth holder's personality, The truth receiver is devastated by the truth (see Appendix A.2 for a full description).

The composition of *Devastating Truth* with *Helping Enemy* is very natural because it elaborates on the reason the advantage bearer offers help to the disadvantaged one. In this sense, this is a hierarchical drama pattern composition, where a pattern, which is in a subordinate position to another pattern, refines that pattern [Vranić et al. 2020]. Another way of composing drama patterns is peer-to-peer, which happens through overlapping roles [Vranić et al. 2020] (see Section 5.3 for an example). This is in accordance with the two fundamental ways of integrating patterns as identified by Buschmann and Henney [Buschmann and Henney 2008], namely refinement, which corresponds to hierarchical drama pattern composition, and combination, which corresponds to peer-to-peer drama pattern composition.

## 2.3 Working with Text

As we can see, the essential part of the process of mining and identifying drama patterns is in working with text. Nevertheless, it is quite beneficial to get familiar with the actual performance.

One may be tempted to look only for drama patterns from a certain set. A seemingly slight mismatch makes it easy to overlook you're dealing with a different drama pattern. As we explained, we encountered such a case with the prison scene, which we thought was the *Impossible to Be Together* drama pattern, but then we discovered it

was actually the *Helping Enemy* drama pattern. Furthermore, at that time, this pattern wasn't yet documented. It is good to keep the notes of any possible doubts or alternative to be able to make a proper decision later.

While looking for new patterns it is good to rely on memory. Even when you don't remember exactly the scene in which you saw something similar to what you are seeing right now, the feeling that you are looking at the pattern will signal you this. Nevertheless, this is not an irreversible process: when you find out later that the scene doesn't contain the pattern you thought it does, it is rather easy just to leave it behind.

It is not really necessary to bother yourself with naming the new pattern right away. The aim is to choose a short and descriptive working name for the pattern, by which you can refer to the pattern throughout the process.

After exposing a new drama pattern to the world, it is really important to attach or at least mention the material in which it was identified not just to exemplify it, but also for reproducibility purposes.

### 3. DRAMA PATTERN INSTANCES AS LAYERED TEXT ANNOTATIONS

From Section 2.3 it is clear that the core of the mining process is in working with the text—with the script. In this, it is useful to copy it, write down custom notes, highlight something, or maybe even cross out something unnecessary.

To ensure this within a software tool, there is a need to create a system of working pages for each user. Users should be able to create working pages and do anything they want within these working pages. Working pages keep the original text materials untouched. They represent layers of annotations over the original text material. Whatever users do to the material inside one layer doesn't affect the text material itself nor other layers. Another benefit of layered text annotations is in the possibility to filter certain layer and focus on it, without being disturbed by other layers.

Section 3.1 describes how are working pages and their annotation layers involved in the identification and mining process. Section 3.2 describes how the layers remain useful even after publishing the corresponding patterns.

#### 3.1 Pattern Description Development

Within a working page, pattern instances need to be created and edited. These pattern instances would be in a working stage and won't be visible for other users. There is a need to assign roles and forces of the pattern to the parts of the text and to highlight important parts of the scene. Highlighting could be done by making annotations to the words. To distinguish roles and forces, different types of annotations should be available.

The study (Section 2) showed that in one text material there can be multiple patterns. This leads to the need of a visual variation between annotations related to different patterns. One possibility is to use color to distinguish annotations them. Patterns create layers above the text with annotations. These layers can be shown together when there is color differentiation between patterns as shown in Figure 1.

As number of patterns in a working page can be large, so there is a need for filtering. In this case, introducing the possibility of switching on and off individual layers, each of which actually includes annotations related to one pattern, comes as a straightforward solution. An individual view of a pattern is necessary also for completing its description.

Annotations for a yet undescribed pattern are merely candidates for its actual roles and forces. However, when finalizing a pattern, the user expresses its roles and forces by generalizing the annotations. Thus, the annotations should be provided in some overview, so the user can see them separately from the text.

#### 3.2 Published Patterns

Published patterns should be available for use in working pages, too. Their description is finished, but users can look for their instances in other texts. This can help strengthen the pattern's position in the world of drama patterns. The number of pattern instances throughout text materials also demonstrates the usefulness of that pattern.

It would make no sense to create new annotations for a published pattern since it already has its final annotations established. However, these annotations can be reused to annotate certain parts of the text to prove the pattern's

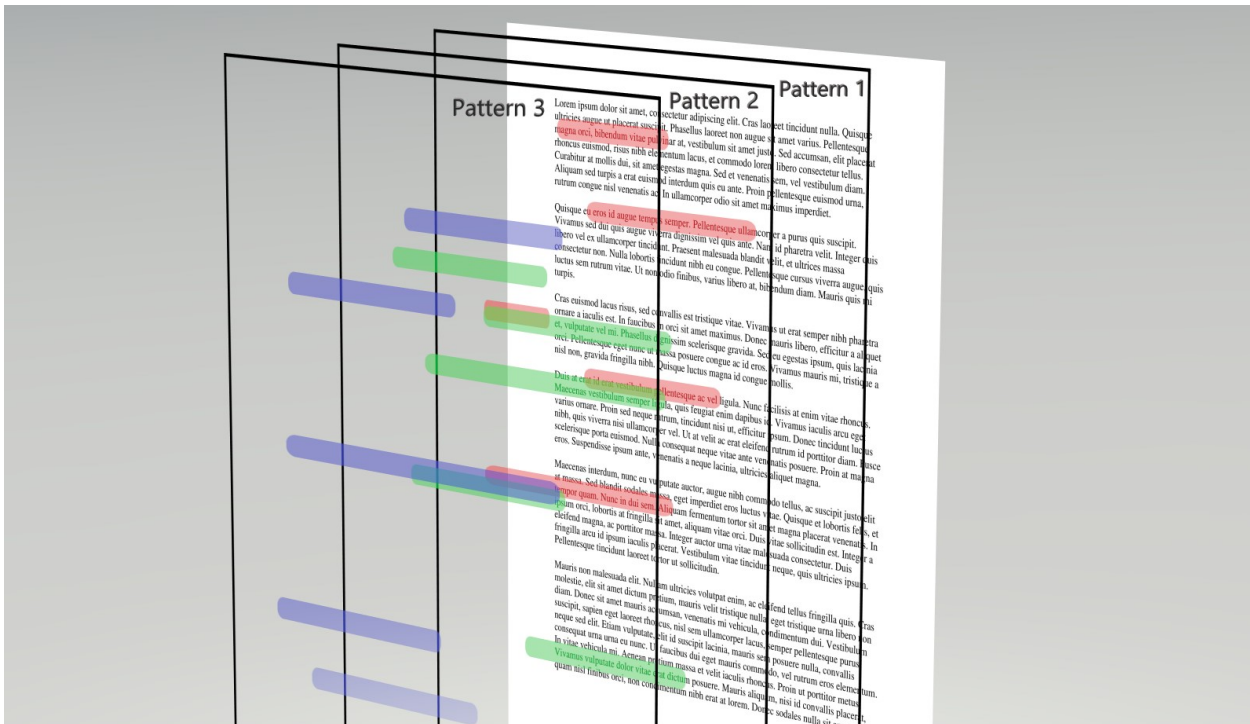


Fig. 1. The layers of patterns created over the text material.

existence inside the text material. The user can make their annotations public, in which case they will occur as a drama pattern instance and will be attached to the corresponding drama pattern in the catalog as an example.

#### 4. COLLABORATIVE DRAMA PATTERN MINING SUPPORT

The study mentioned in Section 2 confirmed the importance of community involvement in working with patterns. It's very beneficial to discuss the mining process with other people to ensure that potential patterns are really patterns. Section 4.1 describes how users could collaborate in drama pattern mining over working pages. Section 4.2 indicates premises for drama pattern publishing.

##### 4.1 Collaborative Pattern Mining

Working pages (mentioned in Section 3) are visible only to the user who created them. Users need to have a possibility to share their working pages with other users and to allow them to contribute to their work on patterns.

Several users working on one working page calls for need to clearly show which annotation was made by whom. This means that each annotation has to have an author—the user, who annotated the words—and, in the working page, this authorship has to be shown to all other users working on it.

When working together on a working page, users should follow some good practices to ensure that their collaboration is smooth. For instance, it would be essential not to rewrite somebody's annotation, but to create a new one on the same words and let the user who will finalize the pattern decide which opinion or definition is better. This would also provide a wide point of the view at the finalization of the pattern because instead of having one annotation that was rewritten by several users there would be several independent and personally attributable annotations to choose from or combine.

Collaboration among a large number of users can be complicated. That's the reason why finalization of patterns is left on the author of the working page. All pattern instances created on the working page belong to the author of the page, even when they were created by one of the collaboration members. As the final step before publishing the pattern to the community, the authors need to summarize all the opinions and ideas their colleagues left on the working page as annotations. This whole process is illustrated by Figure 2.

#### 4.2 Promoting the Results: A Drama Pattern Catalog

Publishing starts a new phase in the pattern's life cycle. When it becomes open to the community, the community can approve its existence. One indicator of the validity of a pattern is a number of its instances among various drama artifacts. The more instances of the pattern are found, the more reliable the pattern becomes.

Unless we speak of small changes to the description or fixing mistakes, changing already published patterns is tricky and dangerous thing to do. In particular, adding or removing roles and forces can have devastating impact on the pattern mining process and its results because roles and forces are being referred to in the working pages. This problem could be resolved by introducing some sort of versioning of published patterns. Whoever needs to make substantial changes to a published pattern, they would save a new version of the pattern keeping the original version untouched.

### 5. PROTOTYPE TOOL

The approach to drama pattern mining proposed in previous sections is supported by a prototype tool.<sup>2</sup> Using the prison scene from *Soul Beat*, the play we mentioned in Section 2, we will go through some typical cases in working with drama patterns during the drama pattern mining process.

<sup>2</sup>The tool is available at <http://fiit.sk/~vranic/dpminer/>.

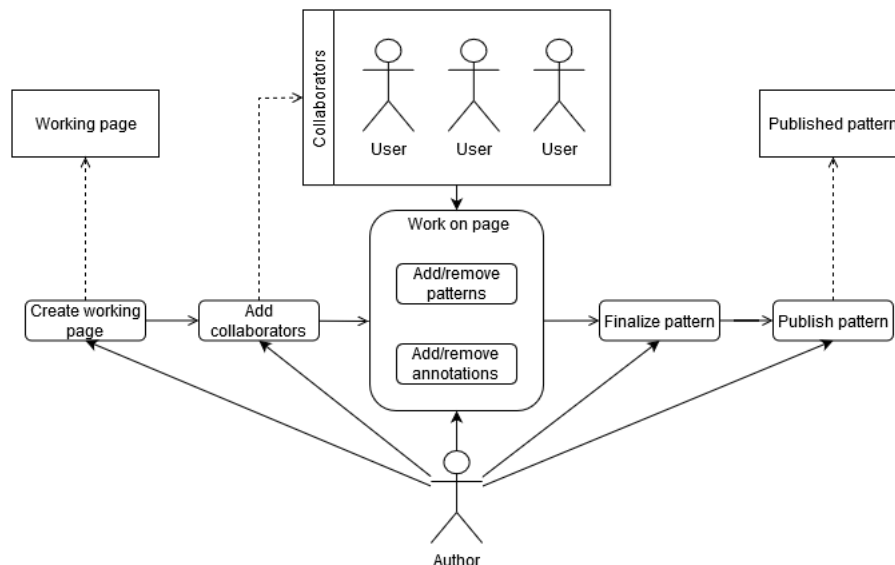


Fig. 2. The involvement of collaborators in the mining process.

## 5.1 Mining Unknown Patterns

Once a part of the text is identified as a possible force or role, it can be marked and annotated, as shown in Figure 3). This annotation becomes a part of a newly started pattern definition. If the pattern recurs, the same annotation can be used to mark other parts of the text.

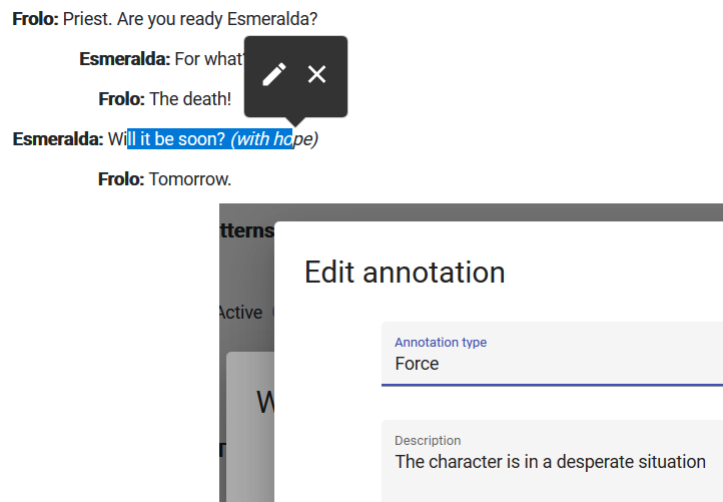


Fig. 3. Annotating a part of the text as a force.

A pattern's final form is created from its representation in the working page. A reference to the text material is automatically added to the list of pattern instances. Once it is published, the pattern appears in the drama pattern catalog.

## 5.2 Identifying Published Patterns

The text material can also contain instances of already published patterns. By selecting a pattern, its roles and forces become available for mapping to the text.

The tool provides an overview of all pattern instances in a working page. As can be observed in Figure 4), for each pattern instance, the description of its roles and forces along with the actual text that was annotated by them is directly accessible. This view is particularly useful to summarize possibly distant parts of the text related to a given pattern. It is available for newly started pattern definitions as well.

## 5.3 Showing Pattern Compositions

In the prison scene, three drama patterns in composition were identified. The main pattern in the scene is *Helping Enemy*, which has been discussed in Section 2.1. *Devastating Truth* helps explain Frolo's intentions as the advantage bearer by revealing a hidden secret (recall this pattern from Section 2.2 or see Appendix A.2). Esmeralda, as the disadvantaged one, is shocked by learning that Frolo is in love with her. This is the *Disbelieved Identity* (see Appendix A.3) drama pattern [Vranić and Vranić 2019]: Esmeralda cannot identify Frolo as someone who loves her. Thus, Esmeralda is the identity disprover from the perspective of *Disbelieved Identity*, while being also the truth receiver from the perspective of *Devastating Truth* (this is a peer-to-peer pattern drama composition mentioned in Section 2.2).

Inevitably, annotations of these patterns overlap with each other, as displayed in Figure 5. To work with one pattern, other patterns can be deactivated to see it better (see Figure 6).



Overview:

Helping enemy		
Devastating Truth		
Disbelieved identity		
<b>Type</b>		
<b>Description</b>		
<b>Annotated words</b>		
Role	the one who is doubted by the identity disprover	Frolo:
Role	the one who doubts that the identity carrier is who he or she claims to be	Esmeralda:
Force	The identity carrier exhibits his or her identity	I love you! Do you hear me? I love you!
Force	The identity disprover doesn't accept identity exhibition	That can't be true! What kind of love is that?

[Add to examples](#)

Fig. 4. A pattern instance overview.

Frolo: Without light! Without fire! In water and dirt! It's horrible! (lookout over the cell from under the cape)

Esmeralda: Light belongs to everybody. Why do they give me only night? (whispers)

Frolo: Do you know why are you here?

Esmeralda: I think I once did, but I don't know anymore. I'm cold, scared and there are animals all over my body!

Frolo: Ah, miserable one! (grabs her by the hand) Come with me then!

Esmeralda: Your hand is deadly freezing. (whispers) Who do you truly are?

Frolo: (lifts

Esmeralda: (looks at him in horror) You, you are the phantom that brought me memories... they are not cloudy or confusing but clear and horrible. I recognize

Frolo: Oh heavens. What have you done to me? My eyes are full of fires, like eyes of grasp of death. But is unab

Esmeralda: What have I done to you? You

Frolo: Listen! I will tell you what I have been afraid to tell myself when I was secretly questioning my conscience, in the deep late nights when the world out there is full of darkness it almost seems that God doesn't see us. I love you! (mysteriously)

Esmeralda: That can't be true! (frightened)

Frolo: Do you hear me? I love you! (shouts with wild flickering eyes)

Esmeralda: What kind of love is that?

Frolo: The love of the doomed one!...

Fig. 5. A view of the prison scene text with all three patterns displayed.

Once each pattern is published, there is still a possibility to see how they were connected together or overlapping each other inside the given text material. From the text material detail, it is possible to view all patterns whose instances are there. This view is very similar to the working page, but it is read-only.

#### 5.4 Involving Collaborators

It is always helpful to add another point of view to the mining process. To make the working page accessible to colleagues, they just need to be added to the list of collaborators for that working page. Collaborators can add and

**Frolo:** Oh heavens. What have you done to me? My eyes are full of fires, like eyes of buzzard that circle around poor lark, chasing its prey until it holds her in the grasp of death. But is unable to tear her up, to gobble!

**Esmeralda:** What have I done to you? You hate me! What do you have against me?

**Frolo:** Listen! I will tell you what I have been afraid to tell myself when I was secretly questioning my conscience, in the deep late nights when the world out there is full of darkness it almost seems that God doesn't see us. *I love you!* (mysteriously)

**Esmeralda:** That can't be true! (frightened)

**Frolo:** Do you hear me? I love you! (shouts with wild flickering eyes)

**Esmeralda:** What kind of love is that?

**Frolo:** The love of the doomed one!...

**Overview:**

Helping enemy	▼
Devastating Truth	▼
Disbelieved identity	▼

Fig. 6. A filtered view of the working page with only one pattern being active.

remove annotations or patterns in the working page. Annotations and patterns contain the information on who created them. This information is displayed also when hovering over an annotation (recall Figure 5).

## 6. RELATED WORK

An attempt to analyze the pattern mining process was also done by Iba et al.'s [Iba and Isaku 2016]. They created patterns for pattern creation, especially mining, writing, and symbolizing patterns. Some parts of their mining process are analogous to the approach proposed in this paper. For example, their mining process starts by gaining the experience in a chosen field by interviewing the experts, expressed the *MA2 Searching Through Conversation* pattern proposed by Iba et al. Here, this is done by getting familiar with the text material and watching the recording, if available. Writing a raw description of a possible pattern from a scene is similar to the *MA3 Collecting Clues* pattern proposed by Iba et al.

The approach proposed here differs from the approach by Iba et al. in scope. While Iba et al. focus on providing a general guide on how to mine patterns, the approach proposed here targets drama patterns specifically and shows some specific results in this context.

The format in which Iba et al. present their patterns is very loose. It misses roles and forces. On the contrary, the approach proposed here deals with roles and forces, and, consequently, with conflicts of these contradicting forces, explicitly since these are essential pattern elements.

DoppioGioco is a software platform for obtaining the response of the audience since the initial phases of storytelling [Damiano et al. 2018]. DoPPioGioco started with emotions of the audience being generated by the audience simulation model. Recently, its authors presented an emotion detection model using artificial intelligence [Damiano et al. 2019]. The system records the audience and uses Microsoft Azure Face API to collect emotion values. From these values, DoPPioGioco computes the corresponding overall emotion of the audience and express it in terms of the GEMEP (Geneva Multimodal Emotion Portrayal) emotion model, which expresses both polarity (kind) and intensity of the emotion [Damiano et al. 2019]. The polarity and intensity of the emotion induced by drama patterns depends on the context in which they are applied. However, a particular drama pattern instance is associated with a particular emotion. Consequently, DoPPioGioco could be used to judge the actual perception of drama pattern instances, which, by comparing it to the expected perception, could indicate the level of their quality.

## 7. CONCLUSIONS AND FURTHER WORK

It has been demonstrated how drama patterns help build drama plays more efficiently even with nonprofessionals [Vranić and Vranić 2019; Vranić et al. 2019]. A number of drama patterns have been published, but many more await to be discovered. This can be done not only in the actual dramatic performance, but also in dramatic texts, scripts, stories, novels, etc. This paper brings an approach to collaborative drama pattern mining in dramatic situations based on layered text annotations. The approach is based on making generalized observations regarding the scenes, which may represent individual drama patterns or their compositions. Drama patterns are exposed within annotation layers. The approach is supported by a prototype tool, within which collaborators can not only mine unknown drama patterns and devise their descriptions, but also identify and mark published drama patterns and explore drama pattern compositions. Drama pattern annotations are kept in a set of annotation layers, which are implemented as working pages in the tool.

The approach is potentially applicable to all patterns that have some textual manifestation. In particular, it would be interesting to try the approach in the domain of design patterns, which are mostly distinguishable in source code (e.g., it is widely known that *State* and *Strategy* are not distinguishable by static code analysis). The approach would benefit from versioning and discussion support within the tool.

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### A. DRAMA PATTERNS

The drama patterns mentioned in this paper are presented here, with the two of them being newly identified and not published before (Appendices A.1 and A.2). The drama patterns are presented in the example based pattern form [Vranić and Vranić 2019]. The key feature of this form is that the context part of the pattern is exemplified rather than being presented in general terms. Here, examples are related to *Soul Beat* (in Slovak, the original title *Tlkot (d)uší*), a play performed by DaMDS EVA, a children and youth theater group (directed by Eva Matysová, Dagmar Štekláčová, and Oľga Šimašková), with the exception of the *Impossible to Be Together* pattern (Appendix A.4), which does not occur in that play. The play is based on *The Hunchback of Notre-Dame*, the famous Victor Hugo's novel.

In this form, the problem that a pattern addresses is expressed as a conflict of the two main contradicting forces, with other forces that could have been identified counted in within these main forces similarly as in the addition of forces as vectors in physics [Vranić et al. 2020].

Each drama pattern generates a dramatic element as a resolution of the conflict of the contradicting forces in the corresponding dramatic situation. This may be a new notion that the audience has to be made aware of (consider the price in the *Helping Enemy* pattern) or it may be an emotion expressed by an actor (consider the devastation in the *Devastating Truth* pattern).

#### A.1 Helping Enemy

Frollo, who was responsible for imprisoning Esmeralda, offers her salvation, revealing her that he actually loves her. Realizing she cannot give her love to such a man, Esmeralda refuses this offer.

Frollo acts as an *advantage bearer*, and Esmeralda acts as a *disadvantaged one*,

*Forces:*

the advantage bearer is an enemy to the disadvantaged one, *But* the advantage bearer offers help to the disadvantaged one.

*Resolution:* Help comes at a price incompatible with the nature of the disadvantaged one. This is a drama pattern which we call *Helping Enemy*. Other examples of this pattern include:

- Harry Potter and the Deathly Hallows – Part 2. Voldemort comes with allegedly dead Harry Potter offering freedom to those who join him, their worst enemy, which is not acceptable to them.
- Star Wars: Episode IV – New Hope. Darth Vader fights with Luke Skywalker. When Luke loses, Darth offers him to join his side. Luke cannot accept this offer.
- Soul Beat (in Slovak, the original title: Tlkot (d)uší, a play performed by DaMDS EVA, a children and youth theater group, directed by Eva Matysová, Dagmar Štekláčová, and Oľga Šimašková). In the scaffold scene Frollo once more—and for the last time—calls upon Esmeralda to run away with him promising he would save her right there on the gallows just seconds before her death.

## A.2 Devastating Truth

Frollo's offer to help Esmeralda and his strange behavior is explained by his secret love to her and for her, which is completely shocking to her. Frollo acts as a truth holder, while Esmeralda is a truth receiver.

*Forces:*

The truth holder expresses the truth to the truth receiver,  
*But* this does not correspond to the truth holder's personality.

*Resolution:* The truth receiver is devastated by the truth. This is a drama pattern which we call *Devastating Truth*. Other examples of this pattern include:

- Star Wars: Episode IV – New Hope. Darth reveals to Luke that he is his father. This shatters the whole Luke's world.
- Captain America: Civil War. Steve Rogers (aka Captain America) admits to Tony Stark (aka Iron Man) that he knew that James "Bucky" Barnes (aka Winter Soldier) killed Tony's parents. This completely destroys the friendship between Rogers and Stark as Stark learns that Rogers sided with Bucky despite knowing what he did.
- Conscience (in Slovak, the original title: Svedomie, a play performed by DaMDS EVA, a children and youth theater group, directed by Eva Matysová, Dagmar Štekláčová, Oľga Šimašková and Dagmar Jurgová, based on the story with the same name by Slovak author Milo Urban). A worried father, while asking a priest for the last anointment for his dying daughter reveals that she's dying because of an abortion of her illegitimate child. The priest gets angry they had a nerve to ask him for the last anointment over such a sinful reason.

## A.3 Disbelieved Identity

Esmeralda is shocked by learning that Frollo is in love with her.<sup>3</sup> Esmeralda cannot identify Frollo with someone who loves her.

Here, Esmeralda acts as an identity disprover, while Frollo acts as an identity exhibitor. The identity disprover doubts that the identity exhibitor is who he or she claims to be (or looks so).

*Forces:*

The identity exhibitor exhibits his or her identity,  
*But* the identity disprover doesn't accept this.

<sup>3</sup>This is a pattern published by Vranić and Vranić [Vranić and Vranić 2019] presented here in the context of the Soul Beat play.

*Resolution:* The identity exhibitor remains sure of his or her identity continuing to exhibit it, while the identity disprover doesn't get convinced of it. Both roles can be represented by groups instead of individuals.

This is a drama pattern which we call *Disbelieved Identity*. Other examples of this pattern include:

- Little Red Riding Hood. When the wolf pretends to be Red Riding Hood's grandmother.
- The Wolf and the Seven Young Goats. When the wolf pretends to be the young goats' mother.
- Roman Holiday (1953). A subtle instance of this drama pattern occurs in the scene when the taxi driver and Gregory Peck don't believe Audrey Hepburn that she lives in Colosseum. This demonstrates that both exhibiting identity and disproving it can be implicit.
- The Real Red Riding Hood (a drama play arranged by Aleksandra Vranić). Upon meeting each other, Red Riding Hoods disprove each other's identity.

#### A.4 Impossible to Be Together

Romeo and Juliet's love couldn't survive under the circumstances it occurred.<sup>4</sup>

*Forces:*

The heroes can't live without each other,  
But the circumstances do not allow them to be together as they are (being real themselves).

*Resolution:* The heroes together turn to a different reality, which often (but not necessarily) means death. This is a drama pattern which we call *Impossible to Be Together*. Other examples of this pattern include:

- Zimna wojna (Cold War, 2018). Zula and Igor commit suicide together after learning that there is no place in the world for them if they are to be what they are.
- Blade Runner (1992/1997/2007). Although Deckard and Rachel manage to escape, it doesn't seem they will live "happily ever after" ("It's too bad she won't live. But then again, who does?").
- Bonnie and Clyde (1967). Bonnie and Clyde's unacceptable "lifestyle" is ended as they are shot dead at a police ambush.
- Natural Born Killers (1994). After one last killing, Mickey and Mallory step into a normal life.

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<sup>4</sup>This is a pattern published by Vranić and Vranić [Vranić and Vranić 2019], quoted here for convenience.

