Dramatizing Software Patterns

Focus Group Report

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ABSTRACT

The focus group on drama patterns we organized at EuroPLoP 2023 attracted 16 participants (apart from the organizers), who together built a short drama play (created by Aleksandra Vranić) based on the motifs from the stories of Alice in Wonderland. We discussed how particular drama patterns metaphorically correspond to some software patterns and elaborated on two examples of such correspondence: the Thoughts Reflecting Environment drama pattern and its correspondence to the Observer design pattern and the Loosely Coupled Situations drama pattern and its correspondence to the Visitor design pattern. Both drama patterns were first played by the participants and then related to the corresponding design pattern. We also played Observer in a technical, nonmetaphoric way. We also made a performance at the banquet, which was accepted with delight. We achieved this with no rehearsals and with the actor for the main role appointed just before the performance, which confirmed once more how powerful patterns are.

CCS CONCEPTS

• Software and its engineering → Patterns.

KEYWORDS
drama patterns, design patterns, organizational patterns, pattern composition

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1 INTRODUCTION

Many formats have been proposed for the description of software patterns in an effort to make them more understandable. Studying the specific pattern examples often helps in understanding them more than just reading their general description. But how would it be to become a part of Observer, Mediator, or Visitor? Or some organizational pattern of software development, like Architect also Implements?

In this focus group, we tried to revive software patterns as drama scenes. For that purpose, we used drama patterns, which enable setting lively plays in no time and in a highly creative, collaborative, and inclusive fashion [5]. Drama patterns also make possible to see patterns from within and to understand why the conflict of contradicting forces is the essence of a pattern and how patterns generate so diverse solutions depending on the context [4].

We discovered the concept of a drama pattern and published several papers on this topic [3–6]. We organized a successful focus group at EuroPLoP 2019 entitled Drama Patterns: Seeing the Patterns from Within that ended in a banquet performance [4]. We also organized a workshop entitled Understanding Humane in Patterns Through Drama as a PLoP 2022 PLoPourri event (remotely).

We have experience in applying drama patterns with hundreds of children of all ages and dozens of students within a regular university course.1

The rest of this report presents the objectives of the focus group (Section 2), performance within the focus group and after it (Section 3), and reflections on what has been achieved (Section 4).

2 OBJECTIVES

The objectives of this focus group were to:

• Build a short play with drama patterns
• Observe how some drama patterns correspond to certain software patterns
• Dramatize some other software patterns (the choice depending on the participants)

An additional objective was to perform the play at the conference banquet, which was scheduled practically immediately after our focus group.

1http://fiit.sk/~vranic/pub/plop22/
2https://is.stuba.sk/katalog/syllabus.pl?predmet=393400
We chose the play we used in our earlier work [6]. The play (created by Aleksandra Vranić) is based on the motifs from the stories of Alice in Wonderland, namely on the second Lewis Carroll’s novel on Alice, entitled Through the Looking-Glass, and What Alice Found There, in which, as its title says, Alice gets to Wonderland through a mirror. There, she finds herself in a large room with many doors. She tries them one by one hoping that one of them will bring her back home. But each door gets her just into another bizarre situation. In the end, she is being woke up by other children on a playground. Excited, she explains them where she was and starts recognizing them as the characters she met. They all claim it was just a dream and call Alice to go play with them. She doesn’t believe them, yet they all go play together.

Figure 1, adapted from our earlier work [6], shows the structural correspondence of the drama patterns used to build this play. Solid edges point to the patterns that elaborate the patterns they originate from, and the dashed edge indicates what pattern is the Echoes fundamental property, echoing. The patterns are numbered in the order of their application. The patterns are annotated by the names of the scenes they constitute.

3 PERFORMANCE
Apart from the organizers, the focus group attracted 16 participants: Sae Adachi, Haruto Aoki, Martin Eisemann, Andreas Fießler, William Flageol, Daud Haiderzai, Takashi Iba, Erika Inoue, Diego Moreira da Rosa, Emi Okubo, Christopher Preschern, Michiel Prouost, Sawami Shibata, Marc Schmidt, Dennis Christian Wilk, and Olaf Zimmermann. We had a very diverse group of participants as we had no admission requirements. No acting experience was required. No knowledge of software patterns was assumed.

Despite we had only 75 minutes for the whole focus group, we managed to play all the scenes in the play. Alice was not always played by a female participant, and whenever a male participant took this role, we called him Alistair.

We started with the Mirrors scene, in which Alice goes around a number of mirrors, represented by other participants, and follows how they reflect her moves. Then there was the Dancing Robots scene, in which Alice meets robots who make her behave like them wanting to keep her with them for good. Next was the Fashion Designer scene, in which Alice meets a fashion designer who tries to sell her some of the goods he designed (see Figure 2). After that, we played the Deaf Witches scene, in which Alice meets deaf witches who misunderstand what she’s saying and who she is (see Figure 3). This was followed by the Birds scene, where Alice walks through the woods and birds and other woods voices start to be articulated expressing her feelings in words. It all ended up with the Interleaving Reality with Wonderland scene, in which Alice is being awoken by other children on the playground as if all that happened was just a dream (see Figure 4). By this, we extensively exercised pattern composition, although we did not emphasize this to the participants.

Apart from the Fashion Designer and Deaf Witches scene, which were played twice, all other scenes were played only once.

After this, we discussed with the participants how some drama patterns seem to correspond directly to certain software patterns. One that we mentioned was Observer [2]. We provided a brief explanation of this pattern for those participants who were not familiar with it, and possibly a refreshing one for those who knew this pattern very well. The problem it addresses was presented as a conflict of contradicting forces:

Observing objects have to be notified of a change in the state of the observed object, but it has to be possible to add them without a need to modify the observed object.

The solution was explained as a notification mechanism that enables observers to easily reflect the state of the subject.

Several participants readily recognized that Observer corresponds to the Birds scene, an instance of the Thoughts Reflecting Environment drama pattern [6]:

A protagonist passes through an environment.

Forces:
There is a need to express the protagonist’s thoughts, but without having the protagonist directly express them.

Resolution: The environment reflects the protagonist’s thoughts by modulating the sounds or visual expressions it already makes.

With respect to the Observer pattern, the subject is the protagonist whose thoughts are being observed by other actors who, consequently, take the corresponding actions.

The other pattern we mentioned was Visitor [2]. The problem it addresses was presented as a conflict of contradicting forces:

Operations have to be added to the objects of certain classes, but without having to change them.

The solution was explained as a backdoor mechanism for making additional operations called from within the objects of the given classes without having to change them when another such operation is added.

Some participants recognized that Visitor corresponds to Alice visiting different rooms, which represents an instance of the Loosely Coupled Situations drama pattern [6]:

A transitioner moves between separate situations.

Forces:
There is a need to connect separate situations, but without affecting what happens in each of them.

Resolution: Introduce a frame situation from which all separate situations will be accessible. Make the transitioner trigger each separate situation from the frame situation by making a transition represented by some observable action.

The transitioner is a sufficient connection between the separate situations. Other than that, they can be kept independent of each other.

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3Echoes is one of the fifteen fundamental properties of things that do have life as identified by Alexander [1]
Figure 1: Drama patterns in Alice in Wonderland (the patterns are numbered in the order of their application and annotated by the scenes they constitute; adapted from our earlier work [6]).

Figure 2: Fashion designer.

Figure 3: Deaf witches.

Figure 4: Alice after waking up.

With respect to the Visitor pattern, the visitor is the protagonist who virtually visits different situations (usually rooms or other physical places) and changes them. Some participants argued this reminded them of Strategy rather than Visitor. This is not a contradiction, since Strategy is practically a half of Visitor.

During the discussion, we also played Observer in a technical, nonmetaphoric way (see Figure 5). We first demonstrated the situation when there is no notification mechanism between the subject and observers. The observers turned their back to the subject, so they couldn’t see whether it was changing or not. The subject had to touch each of the observers one by one and warn them of the change. Then they could have a look at the subject and adjust their state. The state was indicated by the position of hands. Then, the notification mechanism was introduced by having observers positioned so that they can see the subject and change their state based on what they observe.

This connection was first established by Natália Šedová, a student at the Slovak University of Technology in Bratislava.
As it occurred that a sufficient number of participants was willing to perform the play at the banquet, we made some quick consultations. William Flageol accepted the main role, albeit he never tried it during the focus group. There was no time for any rehearsals. We decided to skip only the Deaf Witches scene as we were warned by the conference organizers not to take too much time at the banquet. Apart from organizers, eight participants took part in this final performance (see Figure 6). The audience accepted it with delight. Several colleagues asked us how long we rehearsed this and were very surprised when they heard the answer.

4 REFLECTIONS

The focus group on drama patterns we organized at EuroPLoP 2023 attracted 16 participants (apart from the organizers), who together built a short drama play (created by Aleksandra Vranić) based on the motifs from the stories of Alice in Wonderland.

We discussed how particular drama patterns metaphorically correspond to some software patterns and elaborated on two examples of such correspondence: the Thoughts Reflecting Environment drama pattern and its correspondence to the Observer design pattern and the Loosely Coupled Situations drama pattern and its correspondence to the Visitor design pattern. Both drama patterns were first played by the participants and then related to the corresponding design pattern. We also played Observer in a technical, nonmetaphoric way.

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This focus groups has also implications for rurAllure, a Horizon 2020 project one of the organizers participates in (Valentino Vranić). This project addresses the promotion of rural museums and heritage sites in the vicinity of European pilgrimage routes, part of which are also narratives recorded to inspire travelers as they follow their routes. Consequently, narratives could be easily dramatized using drama patterns making them even more attractive for travelers. On the other hand, getting the rurAllure software developers experience drama patterns would help them better understand how they can apply design patterns.

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