

AperTO - Archivio Istituzionale Open Access dell'Università di Torino

Bringing Authoritative Models to Computational Drama (Encoding Knebel's Action Analysis)

This is the author's manuscript

Original Citation:

Availability:

This version is available <http://hdl.handle.net/2318/1615300> since 2017-12-04T09:36:21Z

Publisher:

Springer International Publishing

Published version:

DOI:10.1007/978-3-319-48279-8_25

Terms of use:

Open Access

Anyone can freely access the full text of works made available as "Open Access". Works made available under a Creative Commons license can be used according to the terms and conditions of said license. Use of all other works requires consent of the right holder (author or publisher) if not exempted from copyright protection by the applicable law.

(Article begins on next page)

This is the author's final version of the contribution published as:

Albert, Giacomo; Pizzo, Antonio; Lombardo, Vincenzo; Damiano, Rossana; Terzulli, Carmi. Bringing Authoritative Models to Computational Drama (Encoding Knebel's Action Analysis), in: Interactive Storytelling. 9th International Conference on Interactive Digital Storytelling, ICIDS 2016, Springer International Publishing, 2016, 978-3-319-48278-1, pp: 285-297.

When citing, please refer to the published version.

Link to this full text:

<http://hdl.handle.net/2318/1615300>

Bringing authoritative models to computational drama (Encoding Knebel’s Action Analysis)

Giacomo Albert¹, Antonio Pizzo¹, Vincenzo Lombardo², Rossana Damiano²,
and Carmi Terzulli²

¹ Department of Humanities and CIRMA, University of Torino

² Department of Computer Science and CIRMA, University of Torino

{giacomo.albert, antonio.pizzo, vincenzo.lombardo, rossana.damiano, carmi.terzulli}@unito.it

Abstract. Maria Knebel is one of the most influential scholars in the field of Drama Analysis. Her work with Stanislavsky has been foundational in the history of theatre: she devised the method of Action Analysis to read the play as a score of actions to be executed by the actors. This paper aims at encoding Knebel’s principles in a formal representation using a computational ontology (Drammar) to prove its expressiveness and to test its efficacy in a production point of view. As an example we use Knebel’s analysis of Pogodin’s *Kremlin Chimes*.

Keywords: Theoretical foundations · Computable models inspired by drama studies · Drama visualization · Drama analysis · Drama ontology

1 Introduction

This paper addresses the formalization of dramatic theory, intended as specific field of study, different from the overall narrative theory, insofar it leverages on the notion of intentional action (see e.g. [33], [3], [5], [26]). Therefore, we neither refer to models of narrative theory, such as Propp’s, nor to generative models of interactive storytelling (such as, for example, [25]). We aim to test the expressive qualities of an existing ontology of drama, *Drammar* [20]. We hope to spread the use of ontological representation as tool for analysing and annotating dramatic texts in a productive and didactic environment. Additionally, this annotation can also be augmented with automatic reasoning, as demonstrated in [14], where we have calculated characters’ appraisal of a given set of emotions via SWRL rules.

In the literature, a few computational models of storytelling address the description of the story as a cultural object, and take a neuter stance with respect to the realization of storytelling systems.

DramaBank [6] aims at modeling the narrative discourse, introducing the Story Intention Graph, a particular encoding of a narrative. Its encoding consists of three interconnected layers: textual (the spans of the original discourse), timeline (story’s events and states), interpretative (goals, beliefs, action impacts, intentions as interpreted by the story viewer).

Drammar [20] models drama in terms of an ontological representation that has identified and encoded the significant elements of the drama domain, namely story units, actions, characters, plans, goals, and story states. Drammar has been applied to the definition of drama as form of Intangible Cultural Heritage ([28], [35]) to the safeguard and dissemination of the object “dramatic story” [15] [19].

The ultimate goal of such models is the collection of resources annotated with metadata. The goal of this paper is to extend the range of applications of computational models and move from a resource building perspective to a production perspective. We take an authoritative, influential and historically-settled model of drama production, Knebel’s Action Analysis, and provide its formal encoding, then visualized through a map. Maria Knebel, very well-known scholar of Stanislavsky and one of the most influential figures in 20th century theory of acting, theorised Action Analysis, teaching actors how to approach dramatic texts, so that they could properly render their characters (i.e. the relevant dramatic elements for live events).

We believe that modeling her dramatic theory and abstracting theoretical knowledge from the tasks she assigns to actors may also contribute to the modeling of dramatic agents. Her method comprehends both the deliberative directions to enact single actions and the overall direction to sustain the logical inner motivation of the character’s behaviour. Thus, her method may indicate the way of merging the character centred approach (best represented by the work of Cavazza [24]) and the drama centred one (represented by Facade [21] and Szilas [32]).

This paper has two main purposes: on the one hand, it aims at bringing authoritative models to computational drama, in order to test it and ground it in historically founded analytical paradigms, already developed and tested within the fields of dramatic and acting theory, and extensively used in productive perspective. On the other hand, it stresses that building the formal representation of a complex cultural object requires an ongoing dialogue with the literature that has been proven representative of that object. Drammar was built starting from the literature on drama aesthetics and techniques, focusing on the authoring side [20]. Here we start considering the literature that analyses drama from the perspective of the artist in charge of enacting it. We encode Knebel’s interpretation into our ontology, also to test the coverage of our model beyond the limits of the annotated resource building task and the feasibility of employing the ontological model within the production task. Moreover, we aim to provide the virtual storytelling community with a comprehensive approach to dramatic agents.

In this paper we will introduce Knebel and Action Analysis; then, we deepen the theoretical principles of Knebel’s analytical method and represent her analysis of the VI scene of Pogodin’s *Kremlin Chimes* as case study; we describe both our methodology for the formal representation of her analysis using Drammar ontology, and the key points that match Knebel’s method with our formal representation; then, we briefly provide a visualisation of the analysis and conclude.

2 Introduction to Maria Knebel’s action analysis

2.1 Knebel and her background

Stanislavsky’s system is a collection of techniques that he developed throughout his whole career, aiming at training actors for preparing their roles (see [8, pp. 1-147]). The texts of his most important scholars and pupils represent a fundamental source for understanding Stanislavsky’s praxis. In this paper we refer to the last – and the most important – of his phases, i.e. the “Method of Physical Actions” (see [22, pp. 117-143], [8]). We focus our attention on one of his most famous pupils, Maria Knebel, because, even if also other important figures conveyed us the “Method of Physical Actions” [30] [34] [7] [1], she wrote the most systematic and influential account of this acting technique, and she theorised her system performing, working and teaching with and led by Stanislavsky himself.

We are able to gain a precise insight of her analysis mainly because she has left a book containing her theoretical account *O dejstvennom p’esy i roli*, translated in French [11], and Italian [13]. Of great importance is also Knebel’s theoretical handbook *Slovo v tvor’estve aktjra*, translated in French [12]. Finally, her autobiography [10] entails relevant analyses and informations.

2.2 Actor’s assignments: actions and goals

Stanislavsky has modified his rehearsal methodologies along his whole career, together with the gradual elaboration of his “system” (see [9, pp. 1-16] and [23, pp. 5-20]). This is usually intended as a method for actors to explore the play, in terms of what they would do in the various situations characters has to deal with [1, pp. XIV-XV]. At the core of this system lies the understanding of characters’ actions, intended as the byproduct of a rational and intentional behaviour. Knebel and Stanislavsky, understand dramatic works not as simple texts, i.e. sequences of words, but as dramatic constructions, i.e. compound, cognitive entreties, built by ordered sets of purposive and intentional actions.

In Stanislavsky there is a strict connection between the concepts of *tasks* and *actions*, where *actions* enacted by actors come from the understanding and realization of character’s *tasks*, and the latter depend from character’s *goals*: [8, p. 240]. The intentional behaviour (in terms of action and goal) is relevant and ubiquitous in the tradition of dramatic theory [26, pp. 74-79]. This is particularly true in Knebel’s codification of the Method of Physical Action.

Under this perspective, rehearsing for actors is a phase of discovery and experimentation that stems from the analysis of the drama: a process of dramatic investigation of characters’ behaviours. The “core chapter” [2, p. 11] of Knebel’s most important theoretical writing explains her rehearsing methodology. Here, she divides director’s and actors’ groundwork into three main stages, i.e. three sequential phases.

Resorting to Stanislavsky’s terms, Knebel has defined the first stage of actor’s preparation as the “intellectual exploration” ([11, pp. 74 ff.] [13, p. 72]) of the dramatic text (see e.g. [22, pp. 15-27; pp. 117-126]). In this initial stage

both actors and director analyse the dramatic text around a table, trying to understand the characters' actions, what they achieve, their aspirations, their reciprocal relationships, and the circumstances that induce them undertaking their actions (see [11, p. 74]): "the actor tries to delineate what his hero does, what he aspires to, who he opposes, who he allies with, and how does he relate to others" [13, p. 72]. Thus, already in this first stage the analysis' core is represented by characters' actions, their goals (or aspirations), and their reciprocal alliances and conflicts.

Then, once actors have understood the "ideological background" of the *pièce* (hence each performer precisely understands the goal of his hero) [11, p. 74], they can go ahead toward the second stage: Action Analysis.

Action Analysis means that actors embody their characters: they do not repeat from memory a text, but enliven characters' actions: they must understand character's behaviour through their own actions. Because actors' expressions, both gestural and textual, depend upon this understanding, the first phases require no learning by heart of the text. The tools and the work that we propose concern these two first phases: the application we are adopting here for analysing and visualizing dramas' structures is able to help us fulfilling this task, that is, the core of Knebel's assignments to actors for approaching their role. Furthermore, Knebel underlines that the third stage, i.e. the enactment of the characters' lines on stage directly stems from the results developed in the previous stages (see, e.g., [12, pp. 207-209]).

2.3 The subtext as a hierarchy of actions

The notion of subtext may be slightly ambiguous from the theoretical point of view, but it is of fundamental importance in history of theatre and it constitutes the basis for a productive praxis [31, p. 136]. Stanislavsky puts the concept of subtext at the core of his idea and praxis of acting, being it the main tool and task that performers should explore [29, p. 36]. It is also a key notion in Knebel's theory: "Subtext [...] it is the *life of the human spirit* of the role, that constantly flows under the words of a text, that legitimize them and ceaselessly livens them up. [...] subtext forces us to utter characters' words" [12, p. 201]. Jean Benedetti's glossary of Stanislavsky's terms defines subtext as "the thoughts and mental images that occur in the actor's mind during the action" [29, p. 684]. As Carnicke says, it is the inner life of a character, "that which impels the character to speak" [4, pp. 225-226]. In Knebel's theory subtext represents a psychological construct that actors build up through both "round-the-table" and "action analysis", in order to motivate – to enact – performance, which is a compound element made of actions and gestures, as well as of the "verbal action", and the character's "interior monologue".

Knebel's notion of action stems directly from the subtext. Therefore, its visualization through the analysis of characters' intentions and their preconditions (and of characters' beliefs and emotions), is intended as tool for helping this practical work. In order to grasp the subtext actors should: (1) understand the characters' goals, and the strategies that they enact in order to pursue them –

i.e. their plans (“tasks”) –, both through gestures and verbal actions [13, p. 54]; (2) translate the text into actions grounded on the so called “given circumstances” [13, pp. 44-49], i.e. the situations that describe the conditions that the character experiences; (3) define a score made both of actions that fulfil goals, and reactions to circumstances. Thus, the subtext becomes a chain of events in which character’s goals, emotions, values and beliefs are clearly stated.

Knebel spurs actors to identify the main and secondary events that occur to a character (see [13, pp. 50-51]), and to focus on the most paramount events, and then to zoom into the details of the single scenes and sections. Implicitly, Knebel theorizes a hierarchical conception of actions and events.

The consistency of character’s behaviour in the subtext is enforced by Knebel via the application of hierarchical structure both to action and goals, particularly through the notions of “supergoal” [13, pp. 60-61], “transversal action” [13, pp. 62-64], and “line role” [13, pp. 65-71]. These features of Knebel’s system, each other interconnected, define her representation of high-level dramatic structures. The “supergoal” does not represent a practical goal, but it is most often related to values and will; as we will see an example in Pogodin’s *Kremlin Chimes*.

3 Knebel’s Action Analysis of Pogodin’s *Kremlin Chimes* – scene VI

3.1 Synopsis of the scene

In *O dejstvennom p’esy i roli* [13, pp. 88-91], Knebel analysed the sixth scene of Nikolai Pogodin’s drama *Kremlin Chimes* [27]. It portrays the meeting of two lovers: the brave and fresh sailor Rybakov, proponent of the new post-revolutionary values, and Masha, daughter of Zabelin, an engineer supporter of the old values. Masha needs to introduce her lover to her father, but suspects that they will bicker. In the previous scene Rybakov met Lenin, who entrusted him with an important task: finding a clockmaker for repairing the Kremlin Chimes. For this reason he arrives late at the appointment, and Masha, offended, went away. Rybakov finds only an old woman, proponent of the old aristocracy. He asks her whether she saw Masha, but she mistook him for a member of the new army, and fears to be arrested. Therefore, she tries to resist, but Rybakov threatens her and obtains the information. In the second part Rybakov meets Masha: he apologizes, but she reproaches him; he justifies himself and she rebukes his justification. Finally, he explains the reason of his delay, and she forgives him. Then, the lovers make peace and arrange to visit Zabelin.

We will now describe Knebel’s analysis, and then provide a formal representation of her analysis through Drammar ontology.

3.2 Knebel’s analysis

Stage 1: Round-the-Table Knebel identifies the main topic of the scene (“Masha’s and Rybakov’s meeting” [13, p. 88]), provides a concise description

Table 1. Knebel’s first stage of description

<i>Knebel’s description of “given circumstances”</i>	<i>Proposed typology</i>
Rybakov loves Masha, but arrives late at their appointment	Precondition
Masha has to introduce Rybakov to her parents	Precondition
Masha did not warn Rybakov about her father’s ideas on Revolution	Precondition
Rybakov explains Masha the gravity of the reasons that let him delay	Action
Lenin asked Rybakov to find a highly-skilled clockmaker	Precondition
Rybakov’s delay	Precondition

of the main action [13, p. 88] and of its analysis, as plotted in *Table 1*. As we see, Knebel pinpoints six “given circumstances” that we may describe as five generic preconditions and only one main action: the one that changes the state of affairs (from conflict to peace between the lovers). Knebel’s following step is selecting the two most important “given circumstances”, that “directly affect the behavior of the two characters”. Hence, she describes the consequences, i.e. which tasks – or better, plans – they induce to the characters (*Table 2*). So,

Table 2. Knebel’s first stage of analysis.

<i>Preconditions</i>	<i>Character</i>	<i>Consequent Characters’ Plans</i>
1) Lenin’s request to finding a clockmaker; 2) the subsequent Rybakov’s delay	Rybakov	Finding Masha and making peace with her
1) Lenin’s request to finding a clockmaker; 2) the subsequent Rybakov’s delay	Masha	Letting Rybakov feeling guilty

in stage 1 Knebel pinpoints the basic action of the scene, and the two main character’s plans. These form the top level of the hierarchy of actions.

Stage 2: Action Analysis Knebel proceeds to the deeper level of the hierarchy of action and focuses on a more detailed description of the scene. Here it is where usually secondary characters are introduced and where we see further preconditions, plans, and actions. In *Table 3* we match the preconditions with the consequent plans (“following actions” in Knebel terms). Through the elements

Table 3. Knebel’s second stage of analysis.

<i>Preconditions</i>	<i>Characters</i>	<i>Plans</i>
Rybakov’s delay	Rybakov	Knowing from the old woman where Masha has gone
Rybakov’s delay	Rybakov	Meeting Masha and explaining her the motivations for his delay
Rybakov’s encounter with Lenin	Rybakov	Telling Masha about his encounter with Lenin
1) Rybakov’s delay 2) The forthcoming meeting between Rybakov and Zabelin	Masha	Letting Rybakov understand that he is guilty because of his delay
Rybakov’s encounter with Lenin	Masha	Making peace with Rybakov
1) Kremlin Chimes do not work 2) Rybakov’s assignement from Lenin to finding a clockmaker	Masha	Knowing whether Rybakov accomplished Lenin’s assignement
The forthcoming meeting between Rybakov and Zabelin	Masha	Preparing and coaching Rybakov for his forthcoming meeting with Zabelin
The Revolution	Old woman	Saving herself from Rybakov

plotted in *Table 3* Knebel explains the motivations for the sequence of actions.

In the first analysis she explained the whole scene through one single action (and conflict); in the second analysis she defines eight plans of all characters and reports a more detailed description of the scene. Thus, the subtext emerges as a sequence of instructions that describe intentional actions, motivated by individual plans organized hierarchically, each of which depends on what characters know or believe (precondition).

4 Ontological representation of Knebel’s Analysis

Taking as input this set of instructions (yet informal) we may now proceed toward a formal representation using a computational ontology (Drammar), described and tested in other occasions [20] [16] [17] [14].

For the sake of brevity, here we encode only the first part of the scene, focusing on the subclasses that represent structures and entities of the drama, thus excluding the linguistic representation and the references to external knowledge (we do not describe the corresponding FrameNet frames). Therefore, as subclass of structure (**DataStructure Class**), we describe plans, units, and scenes (**Plans Class**, **Unit Class**, and **Scene Class**); as subclass of entity (**DramaEntity Class**) we represent agents, actions, goals, beliefs, state of affairs (**Agent Class**, **Action Class**, **Goal Class**, **Belief Class**, **SOA Class**). This formal encoding of Knebel’s description is possible, because the method of Action Analysis shares many seminal elements with the Drammar ontology.

4.1 Units and actions

We begin modeling a seminal shared element, i.e. the dramatic unit: a key feature to partition the drama into chunks of actions. To create our formal representation we consider Knebel’s partition of the scene, recognizing ten main chunks. In *Table 4* we list dramatic units as they emerge from Knebel’s analysis of the scene, and describe them in terms of Drammar units and actions. The first column (Knebel) provides a list of events that we have (in some cases) to atomise in units in order to describe the specific agents’ actions. This atomization is the outcome of the matching of Knebel’s description with Pogodin’s text. Knebel’s account doesn’t follow a steady pace of description: it is very detailed in some cases, briefer in others, or it can even skip some lines. E.g., in *Table 5* we see that action 3) represents a specific and small chunk of the text, while action 4) has no description, and action 5) a larger part of dialogue. This process is consistent with Knebel’s methodology, although it is normally left to the actor’s work in the third stage of rehearsals. In summary, the first column contains both macro actions and micro actions that are all reduced or directly encoded as Drammar units (instances of **Unit Class**). Drammar’s units contain actions. Thus, we have encoded the actions described in the Pogodin’s text. For example, Rybakov’s line “Comrade nurse!” is described as an instance of **Action Class** named **Contacting OW (R)**,³ and linked to the unit with the **hasMember** property.

³ The names of the instances we use here do not entail any specific meaning; they only aim to the comprehensibility of the analysis.

Table 4. Knebel’s third stage of description.

<i>Knebel’s analysis</i>	<i>Drammar Units and Actions</i>
1) During the first years of the Revolution an old woman – descendent of a formerly well-known family – sits on the Boulevard [...] The revolution mixed all social classes [...], today it is necessary to save ourselves. Suddenly a tall sailor appears.	Unit 01 Sleep Baby (OW) Arriving (R)
2) She has to do her best, in order not being noticed by the sailor.	Unit 02 Dozes Off (OW) Looking for M (R)
3) Oh, and it just happened that the sailor asks for something to the old woman.	Unit 03 Contacting OW (R)
4)	Unit 04 Rebuke (OW) Unit 05 Apologize (R) Unit 06 Justifying (R) Reject (OW)
5) The woman [feigns not hearing what the sailor said her and] pretends being occupied with the kid.	Unit 07 Feigning activity (OW) Unit 08 Questioning (R) Unit 09 Repecl (OW) [pretends not hearing]
6) But the sailor is determined and doesn’t give up: on the contrary, he seizes her arm and wants to know something about a girl!	Unit 10 Insists (R) [demanding answer]
7) Oh my God! He undeniably works for the secret service! He will kill me, it is obvious, there’s the revolution!	Unit 11 Complaining (OW) Unit 12 Threaten (R) Unit 13 Interrogate (R) [Commanding]
8) And now the old woman “betrays” the persecuted young lady, in order to get rid of the sailor.	Unit 014 Answering (OW) [pretends not hearing] Unit 15 Interrogate (R) Unit 16 Answering (OW) Unit 17 Interrogate (R) Unit 18 Answering (OW) Unit 19 Interrogate (R) Unit 20 Answering (OW)
9) He runs off.	Unit 21 Thanks (R) Reaches M (R)
10) And now the old woman, afraid of the possible coming back of the sailor, takes the pram with her nephew and saves herself running away.	Unit 22 Regrets (OW) Unit 23 Pray (OW) Unit 24 Leaves (OW)

Then, we have encoded all units and all the contained actions, obtaining the timeline of our scene (**Timeline Class**).

Table 5. Matching Knebel’s description with the Pogodin’s text

Knebel’s description	Pogodin’s text
3) Oh, and it just happened that the sailor asks for something to the old woman.	RYBAKOV (Quickly, to the old woman.) Comrade nurse!
4)	OLD WOMAN (offended): What makes you think I’m a nurse, young man? RYBAKOV: I beg your pardon, it’s all the same to me. OLD WOMAN: It may be to you, but not to me. RYBAKOV: Well, I saw a pram, a baby I wanted to ask you.
5) The woman [feigns not hearing what the sailor said her and] pretends being occupied with the kid.	OLD WOMAN: Don’t make so much noise. Can’t you see he’s asleep? RYBAKOV: Sorry. I won’t do it again. But tell me, was there a young woman waiting here before I came? OLD WOMAN: Get along with you, get along, I can’t hear a thing you’re mumbling.

4.2 Hierarchy of intentions

Then, we described the unfolding of intentions using Drammar’s plans. First, we encode the plans directly connected with single actions. E.g., the deliberation “the sailor asks for something to the old woman” is encoded as an instance of the `DirectlyExecutablePlan Class` (a sub class of plan) named `R_Intentstoaddress_OW_aQuestion`, that contains the action `Contacting OW (R)`. Note that in this case Knebel’s description, as in point 3 of *Table 4*, has been directly encoded as

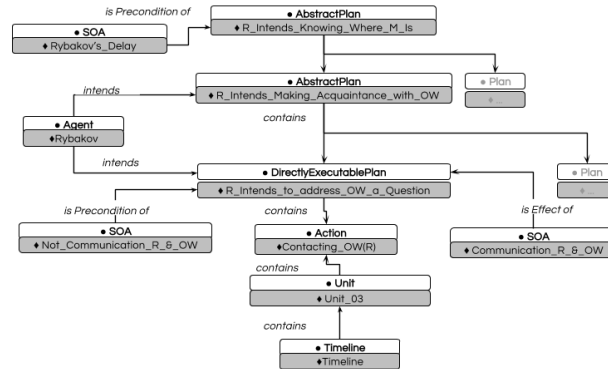


Fig. 1. Example of annotation in semi formal terms (instances and their relations).

plan. Once we have created instances for all the Directly Executable Plans, we represent the hierarchical structure of intentions as defined in Knebel’s notion of subtext (see Section 2.3). In Drammar this is represented by the hierarchical organization of plans: instances of the `DirectlyExecutablePlan` Class are parts of higher level plans. In *Table 4* point 4 we have created an instance of `AbstractPlan` Class, named `OW_Intends_Turning_down_R`, which contains two Directly Executable Plans (`OW_Intends_Blaming_R` and `OW_Intends_Rejecting_Apologies`).

Shifting to Rybakov’s actions, Knebel in *Table 4* describes his actions performed during units 3-13 with two sentences, respectively Points 3 and 6. Therefore, resorting to this description we devise two Rybakov’s Plans, one for each Knebel’s point: `R_Intends_Making_Acquaintance_with_OW` (units 3-6) and `R_Intends_Knowing_Whether_OW_Saw_M` (units 8; 10; 12-13).

Knebel’s analysis enforces furthermore the hierarchical structure in point 1 of *Table 3* (“Knowing from the Old Woman where Masha has gone”). Following her instructions, we’ve included the two Rybakov’s plans as part of a higher-level plan: `R_Intends_Knowing_Where_M_Is`.

Drammar’s plans, besides containing actions or other plans, are defined also via preconditions and effects. Also in this case we can resort to Knebel’s analysis: e.g., for her, Rybakov’s delay is precondition of his action. Thus, the Plan `R_Intends_Knowing_Where_M_Is` via the property `hasPlanPrecondition` is connected to the instance of the `SOA` Class named `R_Delay`. The effects are mostly deduced by the logical consequences of the actions. In few cases we use Knebel’s description. For example, the effect of the plan `R_Intends_Threatening_OW` (motivation for the unit 12) has an instance of the `Belief` Class named `OW_Believes_R_Dangerous` as effect, and we deduce it from the point 6 in *Table 4*.

4.3 Results of annotation

The annotation (*Figure 1*) was conducted following the method described in Section 4.1 and 4.2. In order to provide a visualization of the overall annotation

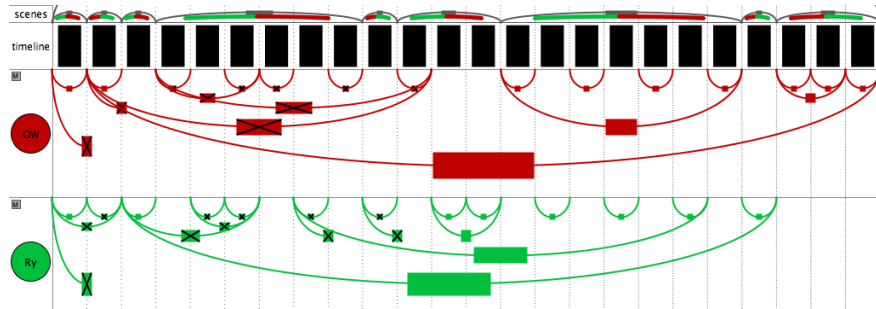


Fig. 2. Visualization of Knebel’s analysis of scenes, actions and plans in the first part of the VI Scene of Pogodin’s *Kremlin Chimes*. Archs on top indicate Knebel’s subdivision of the scene; below are units (in black), and the scores of plans and subplans (of Old Woman and Rybakov). Not achieved plans are marked with an x.

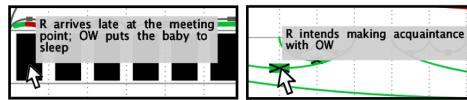


Fig. 3. Details of elements with descriptions “on mouse over”.

we resort to a Processing Sketch [18], that, from the owl, produces a score of intentional and purposive actions, *Figure 2*. It is interactive, thus the whole image is zoomable and some details (such as the descriptions of the units or plans) are available “on mouse over” (see *Figure 3*). This encoding is able to represent Knebel’s hierarchical relationship of characters’ plans. We follow the evolution of the characters’ thoughts, and the causal relationships between plans (achieved or not) and actions (in the units). Moreover, having an intuitive and clear representation at disposal, we can fill some gaps that Knebel left under-described in her informal narrative description.

Our encoding respects the bipartite organization of the scene – of its main conflict: all struggles and unachieved plans in the first half, and all achieved plans after “Masha’s betrayal”, what both characters concern. Thus, our encoding is able to represent the evolution of conflicts.

Focusing on Old Woman’s plans, we see that the second part is split in two, so that her action gains a tripartite structure: 1) tension and struggle, than 2) “Masha’s betrayal”, and finally 3) complaint and leaving; structure clearly portrayed by the sequence of the arches: an expressive feature of the map.

Truncated arches represent plans abandoned by characters. We see that the sparking tension of this scene comes from the non-realization of two high level plans in the first units: two parallel and conflicting plans. These are abandoned, and, once the conflict begins (unit 3), substituted with different plans; the two characters try to achieve their goals with different strategies.

Our encoding respects the structural organization of the dramatic scene, giving indications about the rhythm actors should follow. E.g., in units 8-13 Rybakov has a triple iteration of the same plan: the first two are abandoned plans (Units 8 and 10), and the final one achieves the goal (12-13). It clearly represents a crescendo of tension, that brings to the climax/resolution of the scene. This map provides also hints to actors, highlighting the structural difference between a struggling and a plain dialog: an uneven shape in the first part, and the regularly antiphonal structure in the second part of the scene.

Moreover, this encoding helped us to recognize the characters' "supergoal" (in Knebel's terms). E.g. the two Old Woman's high level plans ("be quiet" and "saving herself from Rybakov") point to the same goal, i.e., rescuing herself from the dangers of the revolutionary life: her ideas on revolution constitute the main preconditions of both her highest level plans.

We believe that our encoding provides a formal representation of a dramatic action in computational terms and keeps all the informations for actors. It helps to produce an actional score for digital dramatic storytelling, focusing both on the whole narrative and the agent's deliberative behaviours.

5 Conclusion

In this paper we indicate that a computational encoding of agent's behaviours may be proven effective in representing an authoritative models such as Knebel's Action Analysis. Her notions of active action and subtext may be encoded in a computational ontology (Drammar) and they may be also rendered in a visualization. We have demonstrated that the encoding will preserve all the Knebel's features. Furthermore, we have suggested that this approach may be interesting for virtual storytelling, because it provides a new insight on how to design an interactive story that leverages on the consistency of agents' intentional behaviours.

References

1. Benedetti, J.: *Stanislavski and the actor*. Methuen Publishing (1998)
2. Bergamo, A.: *Introduzione*. In: Bergamo, A. (ed.) *L'analisi della piece e del ruolo mediante l'azione*, pp. 1-28. Ubulibri (2009)
3. Carlson, M.: *Theories of the theatre : a historical and critical survey from the Greeks to the present*. Cornell University Press, Ithaca (1984)
4. Carnicke, S.M.: *Stanislavsky in Focus*. Routledge (2009)
5. Dukore, B.F.: *Dramatic theory and criticism: Greeks to Grotowski*. Holt, Rinehart and Winston, New York (1974)
6. Elson, D.K.: *Dramabank: Annotating agency in narrative discourse*. In: *Proceedings of the Eighth International Conference on Language Resources and Evaluation (LREC 2012)*. Istanbul, Turkey (2012)
7. Gorchakov, N.: *Stanislavski directs*. Minerva (1968)
8. Gordon, M.: *The Stanislavsky technique: Russia*. Applause (1987)
9. Gordon, M.: *Stanislavsky in America: An Actor's Workbook*. Routledge (2010)

10. Knebel, M.: *Vsja zizn'*. VTO (1967)
11. Knebel, M.: *L'analyse par l'action du pièce et du rôle*. Actes Sud-Papiers (2006)
12. Knebel, M.: *Le verbe dans l'art de l'acteur*. Actes Sud-Papiers (2006)
13. Knebel, M.: *L'analisi della pièce e del ruolo mediante l'azione*. Ubulibri (2009)
14. Lombardo, V., Battaglino, C., Pizzo, A., Damiano, R., Lieto, A.: *Coupling conceptual modeling and rules for the annotation of dramatic media*. *Semantic Web pre press*, 1–32 (2014)
15. Lombardo, V., Pizzo, A.: *Digital heritage and avatars of stories*. In: *Proceedings of the 1st Int. Workshop on Collaborative Annotations in Shared Environment: metadata, vocabularies and techniques in Digital Humanities*. pp. 1–8. ACM (2013)
16. Lombardo, V., Pizzo, A.: *Ontologies for the metadata annotation of stories*. In: *Digital Heritage*. ACM, Marseille, France (2013)
17. Lombardo, V., Pizzo, A.: *Multimedia tool suite for visualization of drama heritage metadata*. *Multimedia Tools and Application Special Issue on "Multimedia for Cultural Heritage"* (2014)
18. Lombardo, V., Pizzo, A.: *Ontology-based visualization of characters' intentions*. In: Mitchell, A., Fernández-Vara, C., Thue, D. (eds.) *Interactive Storytelling, Lecture Notes in Computer Science*, vol. 8832, pp. 176–187. Springer International Publishing (2014)
19. Lombardo, V., Pizzo, A., Damiano, R.: *Safeguarding and accessing drama as intangible cultural heritage*. *ACM Journal On Computing and Cultural Heritage* 9(1), 5:1–5:26 (Feb 2016)
20. Lombardo, V., Pizzo, A., Damiano, R.: *wikidrammar* (2016), <https://www.di.unito.it/wikidrammar>
21. Mateas, M.: *A neo-aristotelian theory of interactive drama* (2000)
22. Merlin, B.: *Konstantin Stanislavsky*. Routledge (2003)
23. Mitter, S.: *System of Rehearsal*. Routledge (1992)
24. Peinado, F., Cavazza, M., Pizzi, D.: *Revisiting Character-based Affective Storytelling under a Narrative BDI Framework*. In: *Proc. of ICIDIS08*. Erfurt (2008)
25. Peinado, F., Gervás, P.: *Evaluation of Automatic Generation of Basic Stories*. *New Generation Computing* 24(3), 289–302 (2006)
26. Pizzo, A.: *Neodrammatico digitale*. Accademia University Press (2013)
27. Pogodin, N.: *Kremlin Chimes*, vol. *Three Soviet Plays.*, pp. 7–89. Foreign Languages Publishing House (1961)
28. Smith, L., Akagawa, N.: *Intangible Heritage*. Taylor & Francis (2008)
29. Stanislavsky, K.: *An Actor's Work: A Student's Diary*. Routledge (2008)
30. Stanislavsky, K.: *An Actor's Work on a Role*. Routledge (2010)
31. Stanislavsky, K., Hapgood, E.: *An Actor's Handbook: An Alphabetical Arrangement of Concise Statements on Aspects of Acting*. A Theatre Arts book, Routledge (1963)
32. Szilas, N.: *Idtension: a narrative engine for interactive drama*. In: *Proc. 1st International Conference on Technologies for Interactive Digital Storytelling and Entertainment (TIDSE 2003)*. Darmstadt (Germany) (2003)
33. Szondi, P.: *Theory of the moderna drama parts i-ii*. *boundary 2* 11(3), 191–230 (Spring 1983)
34. Toporkov, V.: *Stanislavski in rehearsal*. Routledge (2004)
35. Vecco, M.: *A definition of cultural heritage: From the tangible to the intangible*. *Journal of Cultural Heritage* 11(3), 321 – 324 (2010)