Practicalities and Ideologies, (Re)-Considering the Interactive Digital Narrative Authoring Paradigm

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ABSTRACT
In this paper, we discuss the hypothetical nature of authoring Interactive Digital Narratives (IDNs) and the formal authorial process for this medium. We explore the current state-of-the-Art in IDN authorial approaches and consider the perspective of a traditional and technologically naïve author. We propose a combination of meta-narrative and autonomous agent approaches in a quest to democratize IDN authoring to a wider, less technically oriented audience. In doing so, we ask fundamental questions with regards to how the user experience can be expressed within the authorial process. We also, as part of this discussion, reflect on the nature of authoring IDNs and the author him/herself.

Categories and Subject Descriptors
D.2.1 [**Requirements / Specification**]: Tools

H.5.2 [**User Interfaces]**: Input Design and Strategies, Evaluation and Methodologies

I.6.8 [**Types of Simulation**]: Gaming

General Terms
Design, Human Factors, Theory.

Keywords
Interactive Digital Narrative Authoring, Meta-Narrative, Autonomous Characters, Levels of Authoring, Reduced Narrative Control, Video Game Authoring, Authoring Tools, Affordances of Authoring

1. INTRODUCTION
Research in Interactive Digital Narrative (IDN), from a technical point of view, has focused on the development of advanced computational systems to enable highly reactive and/or generative experiences, mainly concentrating on Artificial Intelligence (AI) constructs. In parallel, the humanities-derived perspective has been concerned with the analysis of the resulting experiences and the creative potential of interactive narratives vs. traditional forms of storytelling. Thus far, much less attention has been given to the creative process in producing IDN experiences and how a larger community of IDN makers could be created. Educating others in the use of developing tools, and thus creating a new class of author – for which Janet Murray (1997) [1] has offered the term cyberbard – has not been an area of focus for most projects thus far. We use IDN as an inclusive term to denote many forms concerned with interactive narration in digital media, including Interactive Fiction, Hypertext Fiction, and Interactive Drama, but also narrative-focused Video Games and art installations. However, only a small number of major works so far have been explicitly described as fully-realized IDNs.. Practically speaking, the lack of full-featured, dedicated integrated development environments (IDEs) is an important part of the problem, as it prevents community members to experiment and explore the boundaries of the medium's potential. Consequently, many researchers have become first toolmakers and secondly – for the lack of authors – become content creators themselves. However, toolmakers, whilst enablers, will most likely not be the most suitable people to best exploit the potential of their tools creatively. We believe that more focus should be put on fostering a class of content creators is instrumental for IDN to fully realize its potential. While authorial needs and aspirations must be considered in the design of such IDEs, more needs to be done in order to support the transition of traditional authors towards creating IDNs and to attract new creative talent.
On this backdrop, we offer this paper, a position piece, decidedly abstract in nature, as a starting point for future discussions and concrete, more author-oriented implementations.

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2. IDN Design
Similar to the design process in non-narrative Video Games, IDNs require an authorial process. The case of IDN is potentially more complex as it also adds the element of hypothetical possibilities as a core mechanic, which also shapes the user experience. This is a difficult proposition to any authorial endeavor, further complicated by different approaches and ideologies. Both the EC IRIS [2] and UK RIDERS [3] projects explored this question from a community perspective.. In essence, one school of thought is concerned with narrative coherence from a top-down perspective [4, 5, 6] whilst another is concerned with dynamic narrative representation and adaptable believable agents from a bottom-up view [7, 8, 9]. Although ideologically opposed, these approaches are not conflicting per se. The notion of an autonomous character is not entirely incompatible with a structured narrative. Similarly, a character-based simulation environment can also incorporate top-down narrative elements as long as these can be related to a character's knowledge base. However, these approaches are inherently complex and the articulation of logical choices at both

narrative and character levels are challenging for traditional authors.

In order to bridge the gap between traditional authoring and IDNs, low-level authoring tasks need to be abstracted as much as possible. We believe that a tighter integration of top-down and bottom-up IDN authoring techniques could lead to a solution.

2.1 Traditional vs IDN Authoring

While the traditional author produces a holistic, static piece, the IDN author creates a system whose participatory and procedural nature results in dynamic and sometimes unpredictable outcomes. The "cyberbard" is a system architect, an artist who finds joy in offering opportunities for interaction and exploration. This foundational difference suggests that many existing, authors might not be interested in IDN, since procedural expression would require them to deeply re-think their existing practice. Rather, the focus should be on the education of a new class of author, one deeply interested in procedural methods and participatory design. Murray's "cyberbard" is therefore much more than just a label - ,the term offers a useful differentiation from the author of old. Conceptual abstractions that educate and enable cyberbardic authorship are of equal importance to the concrete technical implementation. For the non-expert, narrative equals linear, static stories. The realization that other forms of narrative are possible is the first step towards increasing IDN authorship. It is for this reason we caution against the use of terminology that aligns IDN with traditional forms. Compounds such as "interactive storytelling" or "interactive drama" – while perfectly fine for the expert – evoke a mental framing of "traditional form + interactivity" which all too easily leads to unsatisfying works that combine traditional structures with a few interactive elements, a practice we have termed "interactivization." [10]. Instead, the emphasis should be on understanding interactivity and exploring its boundaries from a narrative perspective as proposed by Crawford [11]. Whilst retro-fitting traditional narrative concepts is perhaps a natural first approach in understanding the medium, ultimately, IDN will require its own concepts as a vehicle for human expression. The evolution of cinema as a medium, offers a useful comparison here – early films imitated well-known genres such as theatre [12], but then quickly developed its own set of values, mechanisms, references and unique properties.

Rather than an exercise in interactivization, IDN authoring is an effort in finding a balance between opportunities for interaction and narrative coherence, in providing agency, immersion and a transformative experience [1]. However, established rules authors can follow – as in the neoclassical concept of unities (of time, place, and action) do not exist. Equally, conventions such as continuity editing, specific forms like the short story and the novel, or clearly established genres like the film noir, or the story of initiation are missing. Cyberbardic authorship therefore is also an exciting opportunity in finding forms, conventions and genres. Historically, IDN authors have followed examples set by particular artifacts and their "styles" of implementation, for example text-based adventure games in the tradition of Infocom's adventure games like Zork (1983) [13] in the Interactive Fiction (IF) community or Hypertext Fiction in the tradition of *Afternoon, a Story* (1991) [14]. However, other forms of IDN, for example interactive cinema, and video game narrative do not have such uniquely exemplary works and the associated recognition. In recent history, Quantic Dream and Naughty Dog productions such as Heavy Rain [15], or The Last of Us [16] have established a number of efficient interactive narrative mechanics and designs. We would argue, however, that as remarkable as these productions are, their focus seems to be on replicating compelling cinematic narratives within the confines of the video game medium, a practice Henry Jenkins has brandished as "cinema envy." [17]

3. IDN Authoring Approaches

While it would be naïve to think that IDN can start with an empty slate and mark the advent of a new narrative form without any recourse to traditional forms, we can still make strides towards avoiding interactivization. This means an authoring system should be very careful about embedding concepts origination from earlier forms of narrative. The Freytagian Arc [18], Aristotelian concepts [19] of the well-formed plot, the ideas of single climaxes and closure through clearly defined endings are examples in this regard. While this question is under-researched to this day, it seems intuitively right to assume that authoring tools, in their underlying conceptual assumptions and practical affordances, exert a major influence on the resulting works.

3.1 Meta Narrative and Society of Agents

In the following sections the authors describe their respective perspectives towards IDN in regards to authoring. While these are specific concepts, from an abstract perspective they can be understood as representing the two broad trajectories in IDN we identified earlier – the top-down approach and the bottom-up approach. Both perspectives have been implemented as ASAPS [20] and Fatima [21] and used by a range of authors in several projects [22, 23].

3.1.1 System Process Product

The top-down approach starts with a theoretical perspective that understands IDN as comprised of System, Process and Product. [10]. The first part of this triad describes the content and structure of the digital artifact, while the latter parts are concerned with the participatory process and the instantiated output of a session. This distinction allows for a clean separation between realized walkthroughs (product) and the content and structure of the artifact (system) while the user's engagement is given equal attention as a separate analytical category (process). From the point of view of narrative analysis, this mean that traditional categories like the story/discourse dichotomy are located with the product as the end result, but not as the initial condition represented in the system, thus necessitating additional categories. *Protostory* describes the overall content of the IDN system, a procedural blueprint comprised from the elements of *narrative design*, *environment definitions*, *settings*, and *assets*.

The author here is not longer the creator of a static, intransient work, but the architect of a dynamic system, a *Protostory*. The responsibility of this cyberbardic author is in assembling the necessary static and dynamic resources in the form of assets and rule systems (for example a physics system, or the societal model underlying an RPG-style game). The narrative design determines progression and structures opportunities for interaction. In principle, the focus is on the coherence of the meta-narrative layer while allowing for dynamic developments as the result of complex combinatorics and generative processes.

In a concrete practical implementation, ASAPS offers the author a variety of types of beats (atomic narrative units) and static as well as procedural linking mechanisms along with numerical trackers, character inventory, and timers. The focus is on creating experimental narrative structures. This authoring system has proven to be efficient in teaching IDN to students and has been used to create about 100 works so far. The focus on simplified

authoring and a meta-narrative layer has meant that more advanced computational functions are not available so far, however the system's modular architecture has been created with the intention to support additional functionality and expose them within the same author-focused UI.

3.1.2 Synthetic Actors

Emergent Narrative (EN) [4, 19] is a bottom-up agent-based approach that relies on synthetic characters taking narrative responsibilities through their interactions with a user. This perspective is inspired by nordic Larp techniques [24], the storyteller's practice [8] and improv [7]. Essentially, the author develops an agent for which all elements of character design apply. This approach could potential offer a natural gateway for traditional authors. It is however very rare for characters to be developed independently, free from meta-narrative considerations and, thus, traditional authors will require a narrative framework to guide the level of characterization. Since EN systems are driven by interactions with a user, the narrative framework is either bare or implicit in the mind of the author. Emergent Narrative approaches provide a high level of simulation fidelity as the focus of the synthetic character is primordially on fulfilling its own role within a defined scenario [25]. While efficient from a simulation perspective, synthetic characters such as these are often lacking in terms of narrative structuring, pacing and authorial expression.

The main aspect of synthetic actors design is to provide interesting or relevant narrative interactions. Since their activities are driven autonomously and are generally self-centered, it is difficult, for an author, to assume control of such communications and shape a meta-narrative at this level. Whilst efforts have been made to take the user experience into account [26], it is difficult to conceptualize authorial intent at a level within which a meta-narrative starts to appear. The author's activity is thus generally associated with low-level interactions such as defining personalities, emotional reactions, thresholds or impact of player and character decisions. Such activity which consists at defining the initial emotional states and trajectories is, in itself, dissociated and far-removed from traditional drama-oriented non-functional considerations. As a result, authoring mainly focuses on creating a hypothetical narrative space on the basis of likely character behaviors [3]. This certainly represents a challenge for the author as it becomes difficult to determine the likely sequencing of events. Authoring synthetic characters necessarily results in the creation of a web of hypothetical inter-connections from which it is difficult for an author to gain much visibility as to the likelihood of events occurring or their impact on higher narrative levels. For these reasons, Suttie et al [25] proposed to focus on developing some level of intelligent feedback, in an effort to offer the author more visibility towards the hypothetical ways in which a synthetic character-based IDN could unfold. Similarly, a direct coupling between meta and character levels would allow for character interactions to be developed in relation to an overall story timeline and structure within the confines of dedicated, smaller narrative spaces. Weallans et al's work [27] on equipping synthetic actors with a basic understanding of narrative context would help bridging meta and character level authoring.

4. Supporting the "Cyberbard"

A major aim of our proposal is to make authoring IDNs more accessible. ASAPS, used in teaching since 2010, provides a promising starting point towards this goal. In our proposed combined platform we want to make the user experience the driving aspect of IDN authoring and thus represented in the authoring tool in two ways: 1) in a visualization of the narrative sequence that takes procedural aspects into account 2) by integrating the playback engine and making the user's view directly available.

At first glance, a meta-narrative approach might seem fundamentally incompatible to emergent, agent-driven narrative meta-narrative perspective. However, there is a solution to this problem – instead of aiming for a complete synthesis, we propose to create an inclusive structure in which each approach's strengths are preserved. Our overall reflection relies on 3 strategies:

1) Develop a multi-layer system check mechanism in order to communicate meta level information to lower level character development (i.e. a character could only refer to an action if that action exists in its action knowledge base) and exploit emerging contextual information

2) Identify a precisely confined narrative frame for autonomous character actions on the meta-narrative level which also limits potential outcomes.

3) Establish the user experience as a driving aspect of IDN

A first step here is the introduction of a communication layer that connects meta-narrative as the top layer and an agent layer on the lower-level in order to provide a "translation service" between them. A bi-directional information flow would enable meta-narrative layer and autonomous agents to react to each other so that developments on the agent layer could be used as information to determine narrative sequencing on the meta-narrative layer. Simultaneously, events on the meta-narrative level could be represented on the lower level as dynamic environment conditions or a specific synthetic actor.

We have established that the "cyberbard" should be prepared to trade some aspects of narrative control in favor of a more hypothetical consideration of IDNs and the active role of the user. Such an approach goes against a deeply engrained understanding of authorship in written cultures and thus constitutes a formidable challenge. Consequently, the cyberbard needs to be supported practically through the overall authoring process. Suttie [26] identified that offering a clear representation of the hypothetical narrative landscape is instrumental in this regard. Practically speaking, any level of narrative feedback to the author should be based on run-time simulations and assist the author in authoring low-level interactions in a manner consistent with meta-narrative considerations. Authoring IDNs necessarily requires re-assessing how a narrative experience is created and presented to an audience. The authorial process should first determine the meta-narrative and overall user experience and then, based on simulations, iteratively expand on the modalities and representations of the authorial intent.

In the current state of IDN, conventions of the length or manner of presentation are still evolving. There are no established equivalences to the short story, novella or novel; neither are there conventions equivalent to montage or continuity editing. The hypothetical plot lines discussed in this section are of a different nature to those commonly exploited in digital games in the sense that these could potentially be directly related to the overall meta-narrative and exploited as such by both users and authors. Live action role playing, especially Nordic Larp has provided a number of solutions to such issues, although relying on the ability for a player to cognitively operate, simultaneously, at both player and character levels with added considerations for meta-level

narratives and other characters' desires. By bridging top-down and bottom-up approaches to IDN authoring, we have expanded the role of the "cyberbard" to a level of narrative responsibilities far beyond the level of control currently enjoyed by traditional authors. A "cyberbard" would necessarily relinquish control over character simulation elements, low-level plot line emergence and overall narrative user experience in favor of orchestrating, not one, but a multitude of potential experiences within the confine of a determined narrative space or theme.

5. CONCLUSION

In this paper we consider the current state of affairs in IDN authoring and describe ideological positions and practical issues. We identify two broad trajectories concerned with meta-narrative coherence and an emergent narrative through a society of autonomous virtual characters.

Our proposal is to connect these two approaches by means of a translation layer and mutual representations. The result would be a combined authoring system that enables potential cyberbards to explore meta-narrative coherence and autonomous agents simultaneously and create forms of narrative expression that balance both aspects. The inclusion in a meta-narrative framework is especially designed to provide a larger audience with access to autonomous virtual characters as part of the authoring process. Future IDN works will have a particular role in serious games focusing on educational aspects. An approach combining character simulation and structure would be especially valuable for applications in which learning requires structure but where autonomous synthetic characters can offer additional depth, especially with topics related to social, relational and personal issues. The examples of FearNot and e-circus designed as interventions on bullying and cultural understanding but also Breaking Points as an exploration of a personal life and Occupy Istanbul – exploring modes of engagement in civil conflict – point in this direction.

Ultimately, with this paper, we like to promote a further discussion on IDN authoring and invite others to contribute to a debate on this open-ended research question.

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