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Digital literacies and children's personalized books: Locating the 'self'

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Abstract

This conceptual article discusses the role of digital literacies in personalized books, in relation to children's developing sense of self, and in terms of assessing the potential impact of artificial intelligence (AI). Personalized books contain children's data, such as their name, gender or image, and they can be created by readers or automatically by the publisher. Some personalized books are e-books enhanced with artificial intelligence, and some can be ordered as paperbacks. We discuss this use of children's personal data in terms of the social location of the self with regard to subjective and objective dimensions. We draw on a map metaphor, in which objective space requires readers to locate themselves in an unknown 'A-to-B' space and subjective space provides an individually oriented world of 'me-to-B'. By drawing on examples of personalized books and their use by parents and young children, we discuss how personalization troubles the borders between readers' me-to-B and A-to-B space experiences, leading to possible confusion in the sense of self. We conclude by noting that AI-enhanced personalized texts can reduce personal agency with respect to formulating a sense of identity as a child.

Keywords: reading, children's books, personalization, artificial intelligence, algorithms

How do children locate their 'self' in texts that have been personalized to them (by machines or humans)? Both deeper theorization and further empirical work are needed to understand the ways in which contemporary children take on the challenge of making sense of their surroundings with digital tools that process and recast their personal data. In this article, we take a conceptual approach to these important issues.

Our argument illuminates the scale of contemporary change in children's understanding of their relationship to others and to contemporary media. We introduce a broad metaphor of spatial understanding to comprehend the scale of novelty entailed by personalized, digitally mediated experiences. Simon Garfield's (2013: 19) example of digitization provides a helpful comparison; he points out that our whole framework for understanding maps has shifted with the advent of personal technologies:

... not so long ago, we placed Jerusalem at the center of our maps; or if we lived in China, Youzhou. Later, it might be Britain or France, at the heart of their empires. But now we each stand, individually, at the center of our own map worlds. On our computers, phones and cars, we plot a route not from A to B but from ourselves ('Allow current location') to anywhere of

our choosing; every distance is measured from where we stand, and as we travel we are ourselves mapped, voluntarily or otherwise.

Yesterday's children learning to interpret the world of textual representations needed to master the equivalent of 'from A to B'. Today's children take the idea of 'from me to B' (Garfield, 2012: n.p.) completely for granted. The 'me-to-B' shift is reflected in the personalization revolution of the twenty-first century: the person becomes defined as a digital being, brought into existence through private data, which customize key experiences, services and products for the individual (Wakenshaw and Dhamotharan, 2019). We are only beginning to comprehend the implications of this enormous conceptual shift for children's learning, and for human development more broadly.

In this article, we discuss personalization in children's print and digital books. Our illustrative examples are personalized print (analogue) and digital books (e-books), read by pre-school-aged children alone or together with their parents. We draw on existing data, theories and illustrative examples to connect to the work of beginning reading that occurs in different ways, roughly demarcated in our map metaphor as the permanently inscribed paper map and the individually oriented digital world of me-to-B. First, we address the question of how children learn differently about reading when they approach it as an abstract 'outside-over-there' challenge and when they learn to engage with personalized texts that make the reader the main character in the story. Second, we discuss the question of how me-to-B readers learn to transfer their skills to more abstract reading challenges. Does the personalized reading text work more like a digital map, changing orientation as its user takes actions, or does it simply offer a short-term form of orientation, along the lines of the 'You are here' arrow on an analogue map? We draw on examples of textual analysis of personalized books as well as our previous data to begin answering these complex questions.

From babyhood, contemporary children participate in video chat that enables distant relations to engage directly with them on Skype or FaceTime. Ideally, these screen exchanges involve adults responding to the baby, who thus learns that screen activity may operate on a me-to-B basis. Ever more families own at least one smartphone, and, if that family includes a small child, the phone almost certainly contains a library of images of that child, both still and moving. Toddlers become adept at swiping and tapping, not only to explore the collection of images of themselves and their families but also to select the most appealing (for example, choosing video over still images) for more extended perusal. Thus, their first forays into the world of mediated symbolic representation is highly individuated and personal. Not only the hero of these little family videos will be familiar to them; they will also bring a customized repertoire of relevant background information to the recognition of the domestic setting.

Babies in earlier times started their mediated lives with relative abstractions. To take a common example, a concept board book full of pictures of infants and their domestic accoutrements (bottles, rattles, cribs and the like) would be familiar in general to these infant interpreters but not be identifiable as 'me and my particular known world'. This abstraction is important as it helps children to learn about the world (Van Kleeck *et al.*, 1997). A baby's ramp into the mediated world has gained a radically gentler slope, with personalized FaceTime exchanges and multiple family videos just a click away. Children will enter the personally familiar space more readily, but, in the process, might learn less about taking the further step of recognizing a generalized version of the artefacts of their own world than they would from an analogue text.

The significance of subjective and objective space and time

Malpas (2018), in *Place and Experience*, contrasts two kinds of spatial awareness in a more abstract version of the mapping terms we have used above: subjective and objective space. Subjective space, he says, is always oriented to an experiencing subject, while objective space

is an ordering of features and locations co-relative to one another, in which no feature or location has any priority over any other, and in which there is, therefore, no centre or focus. ... An objective space is a space that is determined as a space independently of any particular experiencing or acting subject and independently of any particular feature or location associated with such a subject. (ibid.: 66)

Subjective space exists within a me-to-B framework and is intuitively open to personal experience. Objective space, on the other hand, is detached from any single personal perspective; locations are identified in terms of other locations (B in relation to A), as in the impersonal paper map. This metaphor will stretch forwards at least one step further; conceptually lying between the abstract and unchanging paper map and the digital map that shifts to reflect the position of its user is the situated map, which presents an abstract rendition of the surroundings, crucially augmented by the arrow that indicates 'You are here'. Assisted by this site-based marker, the map user is provided with at least a preliminary orientation point.

Currie (2007) suggests that time may be conceptualized in similarly subjective-objective terms. He says we may look at time in terms of past, present and future; in such a conceptualization, 'the present seems to have a special ontological status' (ibid.: 17). In terms of the subjective perspective, the me-to-B, the focal point is *now*. An alternative account of time is more absolute and abstract: 'the time of a sequence as a block, in which the relations between events are understood as a sequence of times and dates in which events relate to each other in terms of *before* and *after*' (ibid.). The second account involves a more abstract case, allowing no room for a personal or subjective sense of *now*. A written text exists as an abstract block of composed time.

Currie's (ibid.) theoretical insights are grounded in texts that are fictional and non-personalized to the reader. They illuminate the spatial and temporal contrast that is required for a young reader to move from an awareness of subjective space and time with room for the personal perspective, to the idea of objective space and time as a necessary concept for understanding the world. We will return to the issue of time later in this article. At this point, we note the connection between spatial and temporal dimensions of reading, and in what follows, we consider the case of personalized books that offer different spatial and temporal dynamics for children to understand the world and its realities.

We focus on the issue of agency, which we define interdisciplinarily, reflecting our own different academic traditions. From the perspective of literary theory, agency refers to a 'compulsive reiterative role-playing in which individuals attempt to find themselves by going outside the self' (Travis, 1998: 6), and in educational studies, agency is typically defined as 'evidence of choice or involvement in decision making' (Twining et al., 2017: 49). Agency can be enhanced or constrained by other human beings who mediate a child's experience, as well as by the design or characteristics of the resources a child is using, such as books and technologies. We are interested

in children's agency because it lies at the core of socially just pedagogies (Hempel-Jorgensen, 2015).

Personalized books for children

Personalized books are books uniquely designed for individual children. The extent of personalization ranges from books created or selected by a digital system to match a child's age or expressed reading interest, to sophisticated individualized books that use personal attributes (such as children's names, drawings or photographs) to tailor story characteristics, aesthetics and/or the story plot. Most paper-based personalized books give agency to the parent in that they ask them to supply the child's data and select the story to be particularized on a digital platform and then printed on demand (for example, Wonderbly Ltd). Digital storybooks have broadened the options, as young readers can personalize story illustrations, as well as audio and interactive features. For example, with the *Mr Glue* digital personalized stories, children can add their own names, audio recordings and digital drawings to the story. Some digital personalized books give agency to the child and invite children to create their own stories based on their own content (for example, the Our Story app), and some provide children with story templates to complete according to the publisher's expectations (for example, the Nosy Crow Fairytale app). All these examples concern static personalization, that is, the use of personal data that does not change during the reading experience. Some digital personalized books, however, can be enhanced with data-collecting features that record children's engagement, history and progress and, based on these data, recommend new content. Such dynamic personalization is run by algorithms and artificial intelligence (AI) that adapt the reading experience to an individual reader as the book is read, simultaneously and seamlessly during the reading process, in ways comparable to how the blue dot aligns the focus of the digital map as its user moves around.

Artificially intelligent personalized books

AI can take many forms. In the case of AI embedded in texts or reading platforms, there are three main capabilities that may be provided: the algorithms archive and augment personal data recorded during book reading; they track the user's engagement; and they learn about the reader and use this 'intelligence' to adjust the reading content. The reader's data might include book-marking, time spent on individual pages, or the history of use of a specific book. Some children's interactive books also supply data on children's mastery of mini games embedded in the books. The data can be used for dividing readers into reading categories or reading styles, and then for adjusting these measures in relation to readers' progress and reading history. Some perceive such use of personalized reading as contributing to enhanced individualized reading (Haiken and Furman, 2018) and argue that it can increase the accuracy of a reading intervention or improve teachers' ability to predict children's reading progress over time.

We argue that these benefits are shadowed by some limitations and that they are based on flawed measures of reader engagement. Namely, algorithmic measurements operate on a one-size-fits-all description of a generic reader, but we know from research that different readers behave differently in response to reading content (Mackey, 2011). An e-book algorithm cannot capture the idiosyncratic strategies used by readers/users of technologies. To take an adult example, the data

that are being collected by Amazon via Kindle are not aligned with what we know about reading habits and behaviour. For instance, collecting data about the amount of time a reader spends on a page has very little to do with how much they liked a book and whether they might want to purchase a similar title. Similarly, sharing publicly how many people highlighted a certain passage in Kindle is of very little use to a reader who is immersed in reading and absorbed with a book. Incorrect data might misinterpret a reader's profile and standardize a reading experience that is highly individual. Similar concern was raised by Willson (2018), who highlighted the degree to which algorithms portray an 'ideal' image of a child. She argued that the image of an ideal child is embedded in most commercial algorithms targeting children, including the 'parameters of the "ideal" child [that] ... create the expectations and detail the processes involved in achieving this outcome' (ibid.: 621).

She also raised the issue of control of data used for algorithmic processing. Given that no algorithm is free from biases, social, political and cultural expectations around input–output are inevitable. There is currently very little transparency in the way commercial algorithms collect and process data in children's reading products. This lack of agency in technology-driven personalized systems is apparent to educational critics (for example, Koponen, 2015), but it is often omitted from discussions about recommendation algorithms that make predictions, evaluations and even decisions on behalf of the users. We concur with these concerns and suggest that if AI is to positively contribute to children's learning, its development must change direction: instead of discovering technical affordances and applying them to a problem, it would be better to identify the problem first and, if appropriate, apply an AI solution. Yet the fundamental issue we perceive with the current design of children's texts, digital and non-digital, is how they shape children's experience of subjective/objective space and of agency in navigating it. The problem of agency is heightened with digital products that offer personalized experiences and that are enhanced with AI. With these reading resources, we argue, the personalized reading text offers a short-term form of orientation, along the lines of the 'You are here' arrow. It offers only a facsimile of a truly personalized experience (those home videos on the phone are much more genuinely personal). At the same time, it short-circuits a child's chance to develop more abstract levels of A-to-B understanding.

Let us consider three illustrative examples: (1) personalized books that position the child as the main hero of the story; (2) observational studies of parents and children using digital personalized books at home; and (3) artificially enhanced personalized reading.

Example 1: Subjective space in personalized story hero books

'Adventures in Alaska' (Mumablue, 2019) is an original story written by the editors of Mumablue Ltd. It is a prime example of the personalized texts currently available on the children's market, which adopt the me-to-B approach. As with other print personalized books of this nature, the child reader is positioned as the hero of the story. As can be seen in the illustrations in Figure 1, the story starts by locating the character in the fictional story, with personalization featured prominently on the first page. This pattern continues throughout the story, with the reader's name and avatar appearing on almost every page. The other characters are secondary; it is the reader – the story hero – who leads all the action. With such a set-up, young readers are encouraged to locate themselves in their own personal history, in the subjective space of 'me, myself and I', in relation to the fictional story. The question of what happens to the 'now' of this hybrid character when the book is closed is a complex one.



Figure 1: Example pages from 'Adventures in Alaska' (Mumablue, 2019), personalized to this article's first author

Non-personalized, traditional children's books have the opposite goal, and the character's 'now' is confined to the storyworld.

It would be too simplistic to jump to the conclusion that it is the presence of personalized features that, on their own, explain the focus on subjective space in children's personalized books. A more nuanced perspective emerges when we consider the design of various personalized books and the mediating role of children's main caregivers when they read these books to their children.

Example 2: Subjective/objective space boundaries with shared reading of personalized books

With pre-readers and children just beginning to read, book interactions are typically mediated by their parents or caregivers, who read the text aloud, often as part of family bedtime or mealtime routines. Some parents prefer merely to read the text, but many also talk about the story and illustrations, thus extending the story through so-called extra-textual talk (Mol and Neuman, 2014). Extra-textual talk includes parents making comments such as 'Look, Little Red Riding Hood's shirt is the same colour as yours!' or 'Do you remember when we visited grandma?'. These comments help children to make sense of the storyline, and they help children to locate the story in relation to their background knowledge and other stories that they may have heard or seen before; in this way, they facilitate children's story comprehension (Lennox, 2013). Books provide children with decontextualized information, and parents, through their extra-textual talk, contextualize them and bring them closer to the child's world. Cochran-Smith (1984) acknowledges both the fact of a text's objective existence and the need for children to learn how to place themselves in the world evoked by that text. She provides close-up and slow-motion evidence of a social process in a nursery class that fosters a particular kind of learning. The children seated on the storytime rug in front of the adult reader are given the opportunity to explore how they move from their own daily existence 'into' a different landscape and to practise taking that step with different books. The books remain constant throughout; it is the adult mediation

of the children's active engagement with the words and pictures that 'moves' these children closer to acquiring conventional literacy skills. We have a very familiar mapping image for this process: the sheet is unfolded and a human finger points to our current location. The details of the whole are provided by the map, but the locative skills of placing ourselves within its contours remain in human hands and minds. What happens when the text itself takes on some of that connective work, when a me-to-B approach is fostered by personalization?

The design of digital books, particularly those with embedded AI personalized feedback, may disrupt the opportunities for parents and caregivers to engage in extra-textual talk and to act as mediators who connect books to children through the me-to-B approach. Many digital books come with highly interactive features that engage the child to actively respond to the book through touch, voiceover and other attention-demanding techniques (Sari *et al.*, 2019). These interactive features are very rarely designed to include a co-reader, adult or peer (Troseth *et al.*, 2020). Rather, personalized digital books are designed to offer automatic 'You are here' tags, automatic feedback loops, progressively adapted to the child's reading progress in the book. These books replace the verbal orientation that has been traditionally provided by adults with their extra-textual talk about the book. Reinforced with AI, the reading experience is highly personalized to one child, but it is not an objective space for children to enter on their own terms. Rather, it is a pre-designed space envisioned by the book's producers. The reading experience is thus less in the form of an objective space co-constructed by the reader, and more in the form of a standardized subjective space pre-constructed by the designer. The adult co-reader is sidelined, even replaced, by the digital scaffolds.

This conflict might explain why most caregivers dislike children's e-books; they perceive them as distracting for the child, and as not suitable for bedtime reading (Strouse and Ganea, 2017). In contrast, the personalized book in Kucirkova *et al.* (2013) was created by the participating mother, using a free story-making app called Our Story. The app allows for inserting pictures and their annotation with text or multimedia files. The mother decided to create a fictional multimedia story based on the family's recent holiday in Greece. She used the girl's favourite doll, Barbie, as the main story character, with photographs of Barbie embedded in the digital book. The mother lent Barbie her voice and audio recorded what Barbie thought or said. She gave the doll the role of a naughty fellow traveller (for example, Barbie was snoring while the family was trying to sleep). Even though the story followed Barbie's fictional adventures (objective space), the reading session, during which the mother and child read the personalized digital story together, took the child to another dimension of the objective/subjective space: the mother's extra-textual talk revolved around connections between the text and the child's holiday memories (for example, 'Remember this place you visited with daddy?'). As such, although the mother's comments located the child in her subjective space, the 'from me to text' was not entirely apparent. Rather, a hybrid space emerged, co-constituted by the personalized story (Barbie on holiday) and the mother's verbal mediation during the shared reading of the digital book. On the cognitive level, the child experienced a blending of objective and subjective space, with references to the past holiday experience as well as the *here and now* of Barbie's adventures. On the verbal level, there was an amalgam of reminiscing and reading, with frequent references to the text, which represented a fictional experience solidified in time and place, and the mother's and child's memories of a lived experience in a far away place in the past.

In another case study (Kucirkova *et al.*, 2015) with two mothers and their daughters, aged 33 months (Child 1) and 41 months (Child 2), we used the same

story-making app, *Our Story*, and focused on the child's own story creation. Child 2 created a story about a clock who experienced the same daily routines as the girl: the clock had breakfast, played with toys, had a bath and so on. The child thus moved from her subjective space to the objective space of the fictional story, and the app enabled her to do so in an easy and smooth process, involving the possibility of including photographs of the clock and relevant home objects (such as a toothbrush to indicate evening routines), as well as to audio record her narrative. The girl's mother helped with occasional text-typing and holding the iPad when the child was taking a picture. There was a certain recursiveness to the girl's movements across the subjective/objective space, with no sense of commitment to one or the other. The borderline between the objective/subjective spaces became porous as the child's personalized story was placed neither in historical time nor in the present time. In Kucirkova *et al.* (2015), we contend that such a hybridization was possible due to the combination of the app's open-ended design and the mother's sensible scaffolding. In this example, we can see the pleasures of moving between subjective and objective perspectives, enabled by new digital possibilities. With the third example, we discuss the key text and design features of personalized books that might contribute to readers' active engagement in such shifting.

Example 3: AI-enhanced personalized books

The formation of generative hybrid spaces becomes complicated when AI enters the equation. Given that the intersection of subjective/objective space is no longer controlled only by humans, but is also shaped by machine algorithms, the question of agency becomes even more urgent. The extent of the reader's volition is essential in determining the extent to which the space is instructive or reductive, hedonic (enjoyable) or onerous, permissive or constraining. In the current deployment of AI in children's digital books (personalized or non-personalized), the reader's agency is subsumed to non-transparent algorithms. Readers who have their stories automatically adapted to their reading 'level', or progression through the book, are constrained in volitionally disrupting the boundaries of the objective and subjective space. The developer's interpretation of the objective and subjective space is imposed on them, constraining reality to only one version, the one beheld in the eye of the commercial provider.

An example of such an experience in relation to children's reading for pleasure is the app *Dino Tales* by Kuato Studios Ltd. *Dino Tales* is an interactive digital book that automatically records a child's engagement and progress with the story, and based on the child's selections of their dinosaur's attributes (such as the colour of the dinosaur's skin) and the dinosaur's journey through the woods, the app creates a customized digital story that the child can read or share when they finish playing the game. Although children have agency in choosing the basic attributes of their dinosaurs, they have little agency in influencing or developing an understanding of the mechanisms behind the story customization.

An example from the area of formal reading instruction is the Lexia™ personalized reading programme, which provides students with 35 different pathways through the reading content, based on the students' answers to one of three reading assessment domains (word recognition, academic language and reading comprehension). Lexia has been gathering personal, reading-related data on US students since 2007 and, as such, is probably the world's largest database of students' scores on reading and language tests that can be used to personalize their reading. With AI, Lexia could be used to automatically detect a child's language competence, and adjust the reading and assessment content accordingly.

While in reading such experiences are only beginning to emerge as dominant, they are normalized in other aspects of life, for example in geographical orientation. In both areas, personalization enhanced with AI significantly reduces an individual's agency. Let us return to our analogy: if you have a print/analogue map, you have to locate yourself in the map before you can exercise your agency with it. To be able to use the map to your advantage, you need to understand the coordinates and to find relevant points in your physical location and on the map's two-dimensional representation. However, with a digital map available for smartphones, there is no requirement for such location skills. All you need to do is to follow the blue dot that moves forward and backward as you move across the physical space. The map assumes that you have less knowledge in interpreting the map–space relationship and, indeed, you need less knowledge as AI is doing the work for you, automatically locating you in a specific geographical location.

Mackey (2007) established that successful readers need to learn how to *find* books that will be of interest to them, and that they frequently apply a consideration of how salience (personal interest) and fluency (ease of access) are balanced in a particular text. Interfering with this process by constantly adjusting fluency levels and downgrading the significance of salience to something determined by an algorithm denies young readers the opportunity to develop selection skills. The irony is that this reduction of readerly agency comes under the heading of 'personalizing'.

A fiction will always be composed from the real-life *here* and *now* of an author, and interpreted from the real-life *here* and *now* of a reader. The interface between these two humans is a block of text that is objective in the fact of its existence. How readers learn to penetrate that block – to set up sightlines, so to speak – and to establish the moment of the text's felt life, represent ongoing questions for all reading scholars.

In order to understand the role of subjective/objective space and the contemporary role of personalization and opaque AI algorithms, we reintroduce the issue of time in reading. Our discussion section expands upon our subjective/objective space argument with a consideration of time and chronotope in texts.

Discussion

When it comes to reading, creating a world incorporating space and time out of language is a complex process, and the activity of interpreting that linguistic phenomenon into a usable sense of the world is equally complicated. Bakhtin's (1981: 84) idea of the chronotope provides the basis for establishing the links between contemporary forms of reading and enduring values of literary texts:

In the literary artistic chronotope, spatial and temporal indicators are fused into one carefully thought-out, concrete whole. Time, as it were, thickens, takes on flesh, becomes artistically visible; likewise, space becomes charged and responsive to the movements of time, plot and history. The intersection of axes and fusion of indicators characterises the artistic chronotope.

Bakhtin's account is little concerned with the need for a *now*, but, at a minimum, a reader will approach the words that create this thickened time and charged space from a readerly *now*. The examples of personalized books and reading experiences we have provided raise the question about the link between the reader's *now* and the *now* of the fictional chronotope in a specific form, one that captures a basic difference between design that accommodates the reader's agency and design that does not.

A useful distinction that sheds some light on the readerly experience of 'now' with personalized texts is that of agentic versus automatic personalization (Kucirkova, 2019). Automatic personalization is driven by algorithms, readers are being addressed directly by their names and content is adapted without their control over it (and often without their explicit consent). With agentic personalization, however, readers can change the nature or representation of the content, and position themselves within a fictional story. The extent to which this representation is authentic to their 'self', or to the 'self' inspired by the text, depends on the quality of the literary craft. One tool that literary authors often employ is direct talk to the reader.

If authors directly address their readers and ask them to perform actions that change the story plot, they can break the fourth wall, as it were. The authorial intent dovetails with the social act of reading as the author uses direct talk to the reader, and thus creates a sense of urgency, interest – and agency. A conventional print text example is the venerable children's book *The Monster at the End of This Book* by Jon Stone (2003), originally published in 1971. The main character, Grover, begs the reader not to finish the book because at the end of the book is a dreadful scary monster. Similarly, *Don't Let the Pigeon Drive the Bus!* by Mo Willems (2004), begins with a bus driver who needs to leave, and who asks the reader to not allow the pigeon to drive the bus. Both books speak directly to readers and encourage them to become directly involved in the story experience. The stories thus turn into a playful space where the child has to negotiate his or her agency with the book's content. We refer to such stories as hybrid personalized/non-personalized stories that provide readers with an opportunity to experience both the subjective and objective space. The reader's agency is enabled through scaffolds that encourage the reader to directly interact with the story (or purposefully resist an action, such as turning the page). Adopting from Bakhtin (1981), directly addressing the reader mobilizes the creative tension between the reader's *now* and the *now* of the fictional chronotope and, as such, offers a reality that is contingent upon the reader's agency. It is perhaps telling that both these books have been effectively adapted to a digital format. In their paper incarnations, they demonstrate that a creative approach is more important to readerly agency than digital options – and it is the creative connection to a child reader's agency that makes the digital versions successful as well.

In this example, the text scaffolds do not reduce the reader's agency; they enable it. Artistic approaches to content creation refer to such scaffolds as 'enabling constraints'. Kant (1987) wrote about enabling constraints in the production of fine art, and he argued that external and internal barriers can create interest and spark creativity that motivate the production of new art. It follows that scaffolds that enable the hybridization of personalized/non-personalized experiences of subjective/objective space give rise to a creative space, as we have seen with the Our Story examples. Conversely, imposing a rigid story template with few gaps for personal data, as is the case with 'Adventures in Alaska' (Mumablu, 2019), turns personalization into a story-replication exercise, where scaffolds are apprehended as rules.

However their story is created, readers must establish forms of wayfinding into the story. A young reader starts with a text that could be about anything at all; with fiction, even the limits of the known world do not necessarily constrain the author's creation. Learning to decide what may become salient as the text progresses, learning how to 'move into' the story in terms of transferring a reader's own *here* and *now* to the different centre of the narrative and learning how to recognize what constitutes 'forward' through the story are all complex skills, initially requiring the assistance of an adult or a more competent peer.

In the twenty-first century, adults and other 'more knowledgeable others' (Vygotsky, 1978) face unprecedented challenges in mediating the subjective/objective boundaries that young readers need to navigate. Their mediation, whether it is through extra-textual talk during shared reading, through modelling response via think-aloud talking or through classroom support via the provision of reading resources, should not be limited to personalized or non-personalized stories, given that both represent important opportunities for experiencing and crafting subjective and objective space. Frequently, it is the personalized–non-personalized hybrids that can engender positive and enriching reading experiences, and that need to be probed through empirical research. The accessibility and variety of children's books, both in digital and print formats, are growing, and so is the development of AI. As our reading landscape mutates and expands, registering the affordances and limitations of me-to-B, retaining the significant possibilities of the more abstract A-to-B and establishing useful landmarks and boundaries in a hybrid world all play a role in today's literacy education.

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We thank the publisher Mumablue Ltd for permission to use their book's illustrations in Figure 1. Readers should note that all our examples are indicative of broader trends in contemporary children's literature, and they are used to exemplify our argument and highlight its urgency; they are not intended to criticize or single out individual companies.

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References

- Bakhtin, M.M. (1981) *The Dialogic Imagination: Four essays*. Ed. Holquist, M. Trans. Emerson, C. and Holquist, M. Austin: University of Texas Press.
- Cochran-Smith, M. (1984) *The Making of a Reader*. Norwood, NJ: Ablex Publishing.
- Currie, M. (2007) *About Time: Narrative, fiction and the philosophy of time*. Edinburgh: Edinburgh University Press.
- Garfield, S. (2012) 'Why modern maps put everyone at the centre of the world'. *BBC News Magazine*, 12 October. Online. www.bbc.com/news/magazine-19908848 (accessed 4 April 2020).
- Garfield, S. (2013) *On the Map: A mind-expanding exploration of the way the world looks*. New York: Gotham Books.
- Haiken, M. and Furman, L.R. (2018) *Personalized Reading: Digital strategies and tools to support all learners*. Portland, OR: International Society for Technology in Education.
- Hempel-Jorgensen, A. (2015) 'Learner agency and social justice: What can creative pedagogy contribute to socially just pedagogies?'. *Pedagogy, Culture and Society*, 23 (4), 531–54. <https://doi.org/10.1080/14681366.2015.1082497>.

- Kant, I. (1987) *Critique of Judgment*. Trans. Pluhar, W.S. Indianapolis, IN: Hackett Publishing.
- Koponen, J. (2015) 'The future of algorithmic personalization'. *TechCrunch*, 25 June. Online. <https://tinyurl.com/uobnyx5> (accessed 4 April 2020).
- Kucirkova, N. (2019) 'Children's agency by design: Design parameters for personalization in story-making apps'. *International Journal of Child-Computer Interaction*, 21, 112–20. <https://doi.org/10.1016/j.ijcci.2019.06.003>.
- Kucirkova, N., Messer, D., Sheehy, K. and Flewitt, R. (2013) 'Sharing personalised stories on iPads: A close look at one parent–child interaction'. *Literacy*, 47 (3), 115–22. <https://doi.org/10.1111/lit.12003>.
- Kucirkova, N., Sheehy, K. and Messer, D. (2015) 'A Vygotskian perspective on parent–child talk during iPad story sharing'. *Journal of Research in Reading*, 38 (4), 428–41. <https://doi.org/10.1111/1467-9817.12030>.
- Lennox, S. (2013) 'Interactive read-alouds – an avenue for enhancing children's language for thinking and understanding: A review of recent research'. *Early Childhood Education Journal*, 41 (5), 381–9. <https://doi.org/10.1007/s10643-013-0578-5>.
- Mackey, M. (2007) *Literacies across Media: Playing the text*. 2nd ed. London: Routledge.
- Mackey, M. (2011) *Narrative Pleasures in Young Adult Novels, Films, and Video Games*. Basingstoke: Palgrave Macmillan.
- Malpas, J. (2018) *Place and Experience: A philosophical topography*. 2nd ed. London: Routledge.
- Mol, S.E. and Neuman, S.B. (2014) 'Sharing information books with kindergartners: The role of parents' extra-textual talk and socioeconomic status'. *Early Childhood Research Quarterly*, 29 (4), 399–410. <https://doi.org/10.1016/j.ecresq.2014.04.001>.
- Mumablue (2019) 'Adventures in Alaska'. Online. <https://tinyurl.com/sazyzjx> (accessed 4 April 2020).
- Sari, B., Takacs, Z.K. and Bus, A.G. (2019) 'What are we downloading for our children? Best-selling children's apps in four European countries'. *Journal of Early Childhood Literacy*, 19 (4), 515–32. <https://doi.org/10.1177%2F1468798417744057>.
- Stone, J. (2003) *The Monster at the End of This Book*. 2nd ed. New York: Golden Books.
- Strouse, G.A. and Ganea, P.A. (2017) 'A print book preference: Caregivers report higher child enjoyment and more adult–child interactions when reading print than electronic books'. *International Journal of Child-Computer Interaction*, 12, 8–15. <https://doi.org/10.1016/j.ijcci.2017.02.001>.
- Travis, M.A. (1998) *Reading Cultures: The construction of readers in the twentieth century*. Carbondale: Southern Illinois University Press.
- Troseth, G.L., Strouse, G.A., Flores, I., Stuckelman, Z.D. and Russo Johnson, C. (2020) 'An enhanced eBook facilitates parent–child talk during shared reading by families of low socioeconomic status'. *Early Childhood Research Quarterly*, 50 (1), 45–58.
- Twining, P., Browne, N., Murphy, P., Hempel-Jorgensen, A., Harrison, S. and Parmar, N. (2017) *NP3 – New Purposes, New Practices, New Pedagogy: Meta-analysis report*. London: Society for Educational Studies.
- Van Kleeck, A., Gillam, R.B., Hamilton, L. and McGrath, C. (1997) 'The relationship between middle-class parents' book-sharing discussion and their preschoolers' abstract language development'. *Journal of Speech, Language, and Hearing Research*, 40 (6), 1261–71.
- Vygotsky, L.S. (1978) *Mind in Society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wakenshaw, S. and Dhamotharan, L. (2019) 'The digital person: The state of the art and science: A white paper from the 2nd Wolfson-HAT Symposium on the Digital Person'. Online. <https://tinyurl.com/vb5by7s> (accessed 4 April 2020).
- Willems, M. (2004) *Don't Let the Pigeon Drive the Bus!* London: Walker Books.
- Willson, M. (2018) 'Raising the ideal child? Algorithms, quantification and prediction'. *Media, Culture & Society*, 41 (5), 620–36. <https://doi.org/10.1177/0163443718798901>.