

Literary Devices of Conveying Knowledge

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1. Introduction

For decades, there has been an intense debate on the relation between literature[1] and knowledge among philosophers and literary critics and there exists a broad range of approaches within this particular field of research[2]. Although there are just a few scholars left who hold that literature cannot be a source of knowledge[3] the discussion has, in my opinion, not focussed enough on further questions such as: If we agree that literature can convey knowledge *then how exactly does this work* ?

In this paper, I shall try to give an answer to this question by proposing that within works of literature special devices can be deployed that facilitate the conveyance of knowledge. Of course, not all of these devices are *genuinely literary* since they can be found in non-literary texts as well. Their use in works of literature, however, is very typical and widespread. Namely, I shall discuss (1) simplification, (2) exemplification, (3) the demonstration of options and representative discussions, and (4) internal focalisation and the generation of immersion. To illustrate my line of argument I shall give examples from novels which can be referred to as 'scientific fiction', a term explained below.

As there are also various approaches in the German debate on the relation of literature and knowledge, I shall firstly clarify which is my underlying approach and why. This also includes an explanation of the term 'knowledge'.

2. Approaches within the German Field of Research, the Term 'Knowledge', and the Approach of Analytical Literary Criticism

The research in Germany can be described systematically by distinguishing three approaches[4]:

1. A basically structuralist approach with the key concept of 'cultural knowledge' ('kulturelles Wissen'),
2. a poststructuralist approach that developed the concept of 'poetics of knowledge' ('Wissenspoetologie'),
3. and the approach of analytical literary criticism that holds the view of aesthetic cognitivism.

It is not only their disciplinary origins that make these approaches so divergent but also their methodological premises and not least their distinct conceptions of 'knowledge'. 'Cultural knowledge' identifies all the propositions which are considered true by a culture (i.e. a group of people) independent of their actual truth value[5]. This does not mean that Michael Titzmann, who first developed the theoretical background in the 1970s, suspends the difference between the epistemic statuses of knowing and believing. He clearly draws a distinction between what is true and what is just thought to be true, but he considers beliefs more important for the understanding of a culture than the possibility that these beliefs might turn out wrong[6]. In his early research on cultural

knowledge Titzmann focused on its role in interpreting texts: we need cultural knowledge (i.e. the knowledge of the culture a text originates from) in order to adequately interpret the text[7]. Later, Titzmann together with Karl Richter and Jörg Schönerth elaborated the concept to describe the relation between the sciences and the arts. Cultural knowledge in this sense is no longer just necessary to interpret a text properly but it can also be conveyed by this text[8]. Conclusively, by virtue of this understanding, literature can be a source of knowledge.

Similarly, proponents of the poststructuralist 'poetics of knowledge' hold that what a culture considers knowledge is historically variable. However, Joseph Vogl, who most prominently developed poetics of knowledge, draws a different conclusion from this than Titzmann: Whereas the latter holds a moderate constructivist view, Vogl admits to a radical historicist conception where knowledge is always a construct of discursive practices[9]. As scientific texts as well as literary ones fall under the conception of discursive practices they are both equally capable of 'producing' knowledge[10]. What is of utmost interest in the poetics of knowledge, then, is not what is conveyed by a text but what rules and performative aspects of representation come into play when a text produces knowledge[11].

Quite contrary to this, proponents of analytical literary criticism draw on the concepts of analytical epistemology where knowledge is based on a traditional philosophical understanding as justified true belief[12]. As I shall adopt this approach in my paper I shall henceforth elaborate on it and finally show why I give preference to it. In analytical epistemology knowledge is analysed as follows:

- S knows that p if and only if
- i. p is true;
 - ii. S believes that p ;
 - iii. S is justified in believing that p . [13]

S hereby stands for 'speaker', p for a proposition such as 'World War II ended in 1945' or 'John is six feet tall'. This so called 'propositional' or 'theoretical' knowledge[14] is the primary subject of epistemology and it is expressed by the sentence structure 'knowing that', for example 'I know that World War II ended in 1945'. Apart from that, there exists also the concept of 'practical knowledge': 'knowing how'. By that we identify a person's faculties or skills such as the ability to drive a car or to write. 'Knowing how' nevertheless is different from 'knowing that' because it does not designate any propositional content. Finally, some philosophers assume that there is a third case, 'knowing how it is' [15]. Contrary to 'knowing that' this sort of knowledge does not describe skills but certain experiences. For example, I can know how silk feels on my skin or how it feels to lose a beloved family member, because I have made the experience. 'Knowing how it is' is a case neither of practical nor theoretical knowledge. Apparently, there are three distinct kinds of knowledge which are different in their structure but still connected with each other ; for when I know how to drive a car I surely know some things

about cars in general and I know, too, how it feels when the car brakes or starts.

Aesthetic cognitivists from analytical literary criticism draw on the concepts of theoretical and practical knowledge but sometimes also on 'knowing how it is'. Two approaches can be illustrated by the works of Tilmann Köppe and Oliver R. Scholz.

In « Literatur und Erkenntnis » Köppe defines knowledge along the traditional lines as explained above. Proceeding on these premises he argues that we can learn theoretical and practical knowledge from literature[16]. Here the wording is of importance: Köppe does not claim that fictional sentences have truth values and therefore are to be considered true with reference to reality but that they can prompt us to hypothesize about reality *by means of them*[17]. In contrast to Köppe, Oliver Scholz' approach shares on what Nelson Goodman and Catherine Elgin called « alternative epistemology »[18] where not only justified *true* beliefs are considered knowledge but also such justified beliefs that are, for instance, *right* or *good*. Scholz assumes that by reading literature we pursue cognitive goals and ensuing from that he develops three hypotheses: (i) propositional knowledge is not the only gain from our cognitive efforts, (ii) the concept of truth and (iii) the concept of propositional knowledge are too narrow. Due to that, Scholz argues, the traditional concept of knowledge in epistemology should be reconsidered (but not suspended !) when we describe cognitive efforts and accomplishments by means of reading literature[19], because what we learn is not only true or false but also right and wrong, good or bad, revealing, « cognitively strengthening »[20], etc.

Köppe and Scholz argue that engaging with literature leads to far more than just gaining propositional knowledge. In the second part of his thesis Köppe's concern is with the acquisition of practical knowledge in the sense of well-founded and evaluative attitudes wherein a person determines that an action or a way of life is good, advisable, or right for them[21]. This definition is far more evaluative than the one usually employed when distinguishing knowing how and knowing that. Practical knowledge basically means every skill we can develop and in most cases it is hardly expressible, because during action we are usually not aware of the corresponding skill as the origin of this action[22]. So, in a situation where I ride a bike I am actively riding it but I am not actively reflecting upon what I am doing at that moment. Reading situations are usually quite different from this which is why, with respect to literature, Köppe's definition is more adequate: What we can learn from literature has to be reflected upon first before we can apply it to our everyday lives. When engaging with literature we are bound to a passive and receptive stance where the actions of others are presented to us and where we can develop evaluate attitudes towards them such as if they are good or bad, reasonable, etc.

Such attitudes are gained by cultivating so-called evaluative feelings towards entities of the fiction and by actively bringing them to mind[23].

It is only then that we can talk about having gained practical knowledge. This knowledge then consists of being able to evaluate different courses of action, to hold and reflect certain principles of action, and to possibly change our attitude towards them[24]. Also, we can train our cognitive abilities when judging our own or someone else's actions[25].

Scholz, too, emphasises literature's potential to sharpen our power of judgement and imagination when it comes to principles of action and what we think of them. In sum, he speaks of so called cognitive goals and identifies five of them: enhancing our faculty of sensorial discrimination, becoming aware of unknown aspects when regarding persons or things, developing new mental organisation patterns, improving our moral judgement and emotional sensitivity, and acquiring justified true beliefs[26].

The reason for me to pursue this analytical approach is for its practicability in textual analysis. Contrary to the first two, the analytical approach is a systematic one with its main focus on the text. Instead of clarifying the cultural background or rhetorical makeup, the terms of this approach allow us to clearly name the kind of knowledge that we can learn from literature. We can identify different courses of action as practical, or facts about the world as theoretical knowledge solely by analysing the text, and as I aim to identify textual devices of conveying knowledge my concern is not with the cultural or historical context but with the text itself. Especially when analysing science-in-fiction, a genre that is distinctly characterised by its authenticity, assumptions about its cultural importance or its rhetorical makeup are pushed into the background by the question what we can learn from it.

3. Science-in-fiction

'Science-in-fiction', a term coined by Carl Djerassi, is often described as a rich source of all three kinds of knowledge which is why I consider it adequate to illustrate my argumentation. We can learn from it a great deal about scientific discoveries and facts, research processes, behavioural patterns and rules in academia, or about academia in general. Djerassi has discussed the term quite often, but still there has not been a systematically profound investigation, e.g. in genre theory, on what exactly the concept comprises. Although this investigation is, of course, not a goal of this paper, I shall give a brief account of what I consider typical of the genre.

Firstly, the subject of science-in-fiction clearly is scientific. This includes subjects from the natural sciences as well as from the humanities. Thereby, science-in-fiction can, on the one hand, describe a certain content, such as scientific discoveries, theories, methodology, experiments, formulas, or any other scientific and complex states of affairs. On the other hand, it can be about the circumstances in which science is done, such as places (e.g. labs, campuses), contexts (e.g. cultural significance, moral problems, politics, meta-scientific discussions/talk about science itself), or people (e.g. scientists, their social environment, students).

Secondly, the characters and the setting are also « informed by direct involvement with scientific knowledge »[27]. They can either be fictional, as mostly deployed by Djerassi, or historically authentic, as in historical fiction about a scientific discovery (e.g. by John Casti, Alan Lightman, Daniel Kehlmann, or Janna Levin).

Finally, science-in-fiction can be characterised by its demand for authenticity. Authenticity can, on the one hand, be created by certain modes of presentation which include, for example, popular scientific jargon[28], footnotes or references, forewords, author's notes, notifications on the verso of the title page, etc. On the other hand and more importantly, authenticity already is an essential property of the genre, contrary to e.g. science fiction. The first, unlike the latter, as Djerassi points out, has to be plausible, because for « fiction to smuggle scientific facts ... it is crucial that the facts behind that science be described accurately »[29]. In other words, science-in-fiction *per se* is a literary genre where science, scientific facts, and/or scientific personnel are described authentically and accurately, which makes it a very suitable case for illustrating the following literary techniques to convey knowledge.

4. Literary Strategies of Conveying Knowledge

As I have stated earlier, I assume that special techniques become effective when learning from literature. I do not claim that by employing these techniques the conveying of knowledge necessarily has to be successful, for there can be several reasons that prevent readers from gaining knowledge, such as already knowing what is being told, or misunderstanding crucial details. It is also not my intention to speak of these techniques *as the means to learn something* from a novel but as devices that *make it easier to learn something*. Furthermore, I neither claim that my list of devices is complete nor do I think that literature's greatest or only merit is the conveying of knowledge. Still, I claim that its epistemic value is a distinct one compared to the epistemic value of e.g. scientific literature. I agree with Simon Mawer, who characterises what makes learning from literature genuine by describing his novel « Mendel's Dwarf » in contrast to « a textbook [from which] you get the familiar dusty story about Gregor Mendel and his peas »[30]: Whereas « [s]cientists are logic and facts[,] writers are imagination and fantasy »[31]. Imagination has often been claimed to be involved when learning from literature[32] as well as other factors like empathy, or the creation of a vivid model of reality, or decidedly selected parts of it. In this respect, literature plays a unique role when serving as a source of knowledge.

4.1 Simplification

It has often been stated that literature is a complex or fine-grained kind of engagement[33] and this claim definitely does not lack examples. But what about the other way around ? Does literature also simplify complex states of affairs ? In the novel « Einstein's Dreams » by Alan Lightman, Einstein's theory of relativity is introduced to the reader through thirty

dated chapters, each of which describes a dream Einstein has during the year 1905 when he, among others, publishes his famous remarks on the special theory of relativity. In each of these dreams, visions of the world are created where the conception of time is always different. One of the chapters is dated « 29 May 1905 » and in it everyone is constantly in motion:

A man or a woman suddenly thrust into this world would have to dodge houses and buildings. For all is in motion. Houses and apartments, mounted on wheels, go careening through Bahnhofplatz and race through the narrows of Marktgasse, their occupants shouting from second-floor windows. [...] No one sits under a tree with a book, no one gazes at the ripples on a pond, no one lies in thick grass in the country. No one is still.

Why such a fixation on speed? Because in this world time passes more slowly for people in motion. Thus, everyone travels at high velocity to gain time.

Since time is money, financial considerations alone dictate that each brokerage house, each manufacturing plant, each grocer's shop constantly travel as rapidly as possible, to achieve advantage over their competitors. Such buildings are fitted with giant engines of propulsion and are never at rest. Their motors and crankshafts roar far more loudly than the equipment and people inside them.

[...] In this world of great speed, one fact has been only slowly appreciated. By logical tautology, the motional effect is all relative. Because when two people pass on the street, each perceives the other in motion, just as a man in a train perceives the trees to fly by his window. Consequently, when two people pass on the street, each sees the other's time flow more slowly. Each sees the other gaining time.[\[34\]](#)

At first, this passage seems just to depict a fantastical world that does not have anything to do with reality. We might also find it humorous that the thought of time as money serves as the basis for a satirical account of a capital-driven society where it is common practice to set buildings in motion in order to achieve a higher profit than others. But beyond that, the basic idea of the special theory of relativity is made easier to understand. It suggests that when an object gets closer to the speed of light, time slows down. This idea is based on the assumption that the speed of light is an absolute constant, whereas the flow of time is not. Time flows at a different rate for someone moving than for someone standing still. Einstein proved this by showing that two simultaneous events cannot be looked upon as simultaneous when observed from a point that is moving. In his paper « On the Electrodynamics of Moving Bodies » he explains this in « § 2. On the Relativity of Lengths and Times » by imagining a rod with two ends A and B where clocks synchronous to a stationary system (i.e. the universal constant of the velocity of light in empty space) are placed[\[35\]](#). He continues:

We imagine further that with each clock there is a moving observer, and that these observers apply to both clocks the criterion

established in §1 [the universal constant] for the synchronization of two clocks. Let a ray of light depart from A at the time t_A , let it be reflected at B at the time t_B , and reach A again at the time t'_A . Taking into consideration the principle of the constancy of the velocity of light we find that

$\delta t'_B - \delta t'_A = \delta t'_A - \delta t'_B$ and $\delta t'_B - \delta t'_A = \delta t'_A - \delta t'_B$, where r_{AB} denotes the length of the moving rod—measured in the stationary system. Observers moving with the moving rod would thus find that the two clocks were not synchronous, while observers in the stationary system would declare clocks to be synchronous.

So we see that we cannot attach any *absolute* signification to the concept of simultaneity, but that two events which, viewed from a system of co-ordinates, are simultaneous, can no longer be looked upon as simultaneous events when envisaged from a system which is in motion relatively to that system. [36]

The difference between both passages becomes clear in various ways. Firstly, the second passage is not in any way fantastical, because no moving buildings are assumed as natural. Secondly, the first passage exaggerates in a humorous way what is explained neutrally in Einstein's paper. Thirdly, the first passage employs an image most of us are acquainted with: sitting on a train and watching the landscape « fly by the window ». The second passage recounts a carefully staged experiment with rods, clocks, and rays of light that the average reader surely has not conducted by himself. Finally, and most important to make clear the principle of simplification is that the second passage is much more complex when compared to the first. This complexity is evoked by the natural use of mathematical expressions and the formula which does not require basic explanation. Also, the mode of presenting the experiment is that of being self-evident. A reader who does not know about mathematics and experimental physics most probably remains clueless when trying to figure out what the fraction $\delta t'_B - \delta t'_A$ means. What can be achieved by the passage from the novel, however, is the reduction of this complexity. In this case, reduction is obtained by exaggerating (of course there will always be someone sitting under a tree reading a book), employing speculative fiction (rapidly moving buildings with roaring engines and flying post offices), using vivid examples (imagery and common places such as « ripples on a pond », people « gaining time », « Time is money »), and by referring to experiences most average readers share (sitting on a moving train, and walking through the streets noticing others passing by). So, while struggling with Einstein's original remarks, Lightman's novel version breaks down a highly complex state of affairs from experimental physics to a situation everyone can imagine easily.

Simplification in the case of scientific fiction therefore seems an effective technique to communicate to « the scientifically uninformed reader » [37] that « science is approachable » [38] by reducing complexity. What we can learn from the literary passage are mainly propositions such as « Time is relative to a moving person or object », which can be verified/falsified in relation to what is true outside the fiction.

4.2 Exemplification

There are two ways of how exemplification can be described: marked and unmarked. The first is a common rhetorical device and occurs when one explains an abstract issue by using a concrete and vivid example case. This '*giving* of an example of something' is natural for every sort of communication, written or oral, artistic or scientific. In Rebecca Goldstein's novel « The Mind-Body Problem » there is an illuminating example (!) for this. The protagonist's friend and later husband, mathematician Noam Himmel, explains to a fellow at a party the difference between the concepts of 'trivial' and 'obvious' in mathematics and logic by giving an abstract account of the different extensions, and finally making his point by expounding a joke:

« You know the old joke about the professor who says that something is trivial and is questioned on this by a student and goes out and works for an hour and comes back and says, 'I was right. It is trivial.'? » He paused for the laughter to stop. « Well, » he concluded, « you couldn't substitute 'obvious' for 'trivial' in that joke. » [\[39\]](#)

Noam achieves to clear up the difference by showing a particular case where the two words are not exchangeable. He rhetorically marks the example by introducing it after the general explanation.

Sometimes it is not only a marked passage in a novel which serves as an example, but it can also be the whole plot, the characters, the setting etc. This is what brings us to the unmarked kind of exemplification which can be described as '*being* an example for something else'. Let me illustrate this with a passage from another work of science-in-fiction. In Djerassi's « Cantor's Dilemma », the character Leah, graduate student in literary criticism, acts as a foil for illuminating the complexities of academia. At a dinner party, her roommate Celestine Price, her boyfriend Jeremiah Stafford, a postdoc, and Jean Ardley, all situated in the research field of biochemistry, are present when Leah raises the following question:

« When and where are you going to publish Celly's results? Isn't there competition breathing down your neck? »
« There sure is. I've heard that Schooley's group in Palo Alto is nearly there. But we'll have the paper finished by the end of next week and then send it to *PNAS*. »
« Who'll submit the paper for you? »
« I thought I'd ask Roger Guillemin in La Jolla. »
« Why Guillemin? » asked Stafford. « You need a Nobel Prize winner to do this for you? »
« Of course not. It's just that I know him well. [...] »
[...]
« Wait a minute, just wait a minute! » Leah couldn't hold back any longer. « Before you people jump to still another subject, what does *PNAS* stand for? »
« *Proceedings of the National Academy of Sciences*, » said Stafford, « [...] It's only the most prestigious journal in our field. »

« Now [...] will you explain to me why you need somebody to submit your paper to the *PNAS*? If I want to send a paper to a journal in my field, to *Critical Inquiry* or *Semiotica* or *Diacritics*, I simply do so – I, Leah Woodeson, not my professor, and most certainly not some surrogate, who has nothing to do with my work. Before you answer that, I might as well ask my second question: how come you're publishing Celly's work with her?

[...] Wasn't Celly the one who did all the work? My adviser suggested the topic for my Ph.D. thesis but she isn't going to put her name on my articles. »[\[40\]](#)

The passage contains many aspects worth of discussion but one topic is salient here: the situation of the young scientist Celestine who needs to publish her research results. What is shown in this passage is that she comes across quite a few problems, three of which are being addressed here and can be labelled 'competition,' 'being vouched for by an authority in the field,' 'discrepancies between who did the work and whose name appears on the paper.' Also, there seems to be quite a discrepancy between the procedures in the sciences and the humanities, as Leah points out.

Celestine's situation acts as an example for typical aspects those situations display where young scientists in general need to present their results to the scientific community. The three problems identified above can be counted as such aspects. So, in other words, Celestine's situation in the novel exemplifies three major problems a scientist has to face at the beginning of his/her career. Contrary to Celestine, Leah is not confronted with these problems. What she shows to the others by explaining the common practices of her field is almost opposite to what Celestine has to experience. So her remarks exemplify how papers are published in the humanities.

Although Scholz' conception of exemplification is derived from a very particular understanding elaborated by Nelson Goodman in connection with visual art, and although this conception is not to be transferred one-to-one to works of literature, one can still assume that exemplifications such as those described just now give the reader what Scholz calls 'epistemic access' (« epistemischer Zugang ») to what is exemplified[\[41\]](#). Accordingly, a reader who is no member of academia and who has therefore not been acquainted with the process of publishing at an early career stage can learn from this passage that in the natural sciences – you have to reckon rivalry and therefore be quick concerning the appearance of the article (« [...] Schooley's group in Palo Alto is nearly there. But we'll have the paper finished by the end of next week. »), – to be successful you should find an authority who is willing to avow for your results (« Who'll submit the paper for you? »), and – you should not publish alone even if you have done the work all by yourself (« [...] how come you're publishing Celly's work with her? »)

Additionally, a reader who is unfamiliar with certain differences in disciplinary cultures can learn that these three aspects do not pose a problem in the humanities. Thus, exemplification acts as a device to

convey knowledge. This knowledge is first and foremost theoretical (« I know that one has to reckon rivalry. ») but it can also make us think about our own involvement in such situations by reflecting upon and cultivating evaluative feelings towards them: « If I were scientist, » the non-scientist reader might ask himself, « would I behave according to what Celestine does, or would I try to act like Leah and protest against these behavioural patterns? Would I accept these conditions for entering the scientific community, or would I rather not live with it? Would I or would I not feel bad about it? » Leah seems to be a character who could not adopt the « slave driver-like behaviour » Djerassi talks about[\[42\]](#), so she represents one option of how the reader could act. These options are part of the next chapter.

4.3 The Demonstration of Options and Representative Discussions

As in Leah's case, literature can also offer us what has often been called « knowledge of possibilities »[\[43\]](#). According to Köppe, literature can give us theoretical knowledge about different courses of action. To turn it into practical knowledge, we have to cultivate evaluative feelings towards them (as mentioned earlier). Now, one great asset of literature is that the reader can learn about courses of action from both, the first person *and* the third person perspective[\[44\]](#) because works of literature can convey an impression of how a person feels about something he/she does, what his/her motivations are, etc. At the same time, an outside perspective is established when other characters or the reader himself evaluate the actions of that character from an analytical position. This possible shift in perspective often leads to a dilemma when evaluating a, for instance, tricky moral situation such as in Jennifer Rohn's novel « The Honest Look ». Protagonist Claire Cyrus works for a biotech company that, among other things, conducts experiments in order to find a drug against Alzheimer's disease. When accidentally making a mistake and having to analyse a cell fluid manually, Claire makes a terrible discovery: The drug she and her research team designed is useless for humans, even though effective on mice. After having run the analysis over and over again throughout the night, she is asked by her colleagues how another experiment went which she had to do in the first place, before the discovery. Among her colleagues is Alan, on whom she has a crush and whom she admires. What goes on inside her mind and how she finally reacts is described as follows:

She had been ambushed before coming up with a plan. Part of her thought it was far too soon to be drawing any conclusions, that it would be better to say nothing. [...]

But she felt honour-bound to tell the men immediately. She had told little lies her entire life, as most do, but never about an experimental fact. To do so would be despicable, and would violate every code of the profession. And if she was right, what about the Alzheimer's patients who would soon receive the new drug? Giving them such false hope would be a crime "' especially if they could have received a more effective drug instead.

[...]

Her heart began to thrum, the heat of her physical reaction to his

[Alan's] presence slowly overwritten by the chemicals icing into her bloodstream. She could not lie, she could not possibly lie.

[...] He had his way of closing down, warm flesh turning to stone. After she confessed, he would lose interest in her.

« No », she said. « It went really well, just as we predicted. »[\[45\]](#)

The reader witnesses a moral struggle within a character's mind which results in a displacement activity. Claire's thoughts seem straight and rational at first when she firmly reassures herself that she is bound by honour to tell her colleagues. As soon as Alan's presence affects her, however, her emotions seem to take over and lead to the lie. The reader is invited to evaluate the situation by judging if what Claire did was bad, understandable (because she was overtired and confused by Alan's being there), intolerable, irrational but precisely because of that all too human, or else. If, for example, the reader comprehends Claire's reaction because, as she realizes, she did not prepare herself properly, she is tired, confused, and desperate, it might be because he can *understand*[\[46\]](#) her by once having made a similar experience, or by finding the characterisation quite plausible from her point of view. If the reader cannot develop any compassion because he thinks that, especially in a situation such as this one, the responsible person should think straight, then he might not accept the described thoughts as an excuse for Claire's actions. By establishing these evaluative feelings, the reader can draw conclusions for his own course of action should he ever be in moral dilemma of similar gravity. He can also sharpen his competence in judging others who act or do not act like Claire in comparable situations[\[47\]](#).

Besides this practical knowledge about courses of action I shall introduce another way to show different options. This one mainly leads the reader to earn theoretical knowledge and to train his/her reflective faculty. In John Casti's « The Cambridge Quintet », a fictive dinner party is arranged by the famous novelist and physicist C.P. Snow who invites Alan Turing, J.B.S. Haldane, Ludwig Wittgenstein and Erwin Schrödinger to Christ's College in Cambridge to discuss the question if a machine could think. During the dinner, Turing presents the others with an early version of the Turing Test, called the « Imitation Game », which he thinks is suited for the determination of rules in human behaviour in order to create a thinking machine. He thereby draws on behaviourism and the idea that externally observed actions can serve as parameters for human intelligence tests. Haldane is the first around the dinner table to protest by throwing in the argument that machines « cannot [...] show any kind of conscious emotional reactions. So it seems to me that the only way we could be sure that a machine thinks is to actually *be* a machine. »[\[48\]](#). Naturally, Turing starts to defend himself by calling Haldane's objection solipsistic and defending his « Imitation Game » as an obviously functioning intelligence test. As this argument does not satisfy the others, Snow argues that

the machine can only do what we order it to do. It has a particular set of instructions that constitute its program, and these instructions are slavishly followed [...]. So I don't see how the

machine could ever display unpredictability, free will, inconsistency or any of the many other things we see in everyday human behaviour.[\[49\]](#)

Turing, in turn, yields an argument of quantity: As the number of possibilities for actions and consequences are quasi-infinite,

it's very unclear what kind of quantities will be computed over the course of a computation that's being carried out by following a given set of rules. Even if the rules are simple when taken individually, going through a succession of many thousands " " or thousands of millions " " of steps using such rules can easily generate entirely unexpected quantities.[\[50\]](#)

More arguments are exchanged as the discussion proceeds but the point should be clear. Each character stands for a certain view and certain opinions that come along with it. As one of these views is elaborated, counterarguments necessarily follow. What the reader can observe here is a critical debate wherein one issue is being looked at from various angles. Debates such as this one surely need not be presented as overtly as in this case ; they can also be performed more subtly, for example when two characters epitomise different attitudes, and their fight or discussion represents arguments typical for the given attitude. This character of negotiation bears two benefits for the reader: Firstly, he is introduced to the practice of critical reasoning because the account of more than one opinion requires the reader's ability to relate to the understanding of what and how different positions are being motivated and justified. Through comprehending different approaches, the reader's reflective sensibility can be brightened, and he can better understand what it means to discuss a complex subject with serious arguments. Secondly, if the reader is not acquainted with the subject that is presented in the novel, it can easily occur that he/she assumes the role of the pupil, or that there is a character that assumes it for him/her. In Simon Mawer's « Mendel's Dwarf », for example, the protagonist Benedict Lambert, a geneticist who suffers from dwarfism and tries to isolate the gene that causes his condition, meets his former crush Jean, a librarian by profession, who asks naïve questions which Benedict answers in the role of the teacher. Moreover, Benedict sometimes even asks test questions that are addressed to the reader: « A test question: Who praised masturbation as the perfect sexual relationship, because it is the only one in which pleasure given is exactly equal to pleasure received? Answer: Jean Genet. »[\[51\]](#)

Thirdly and finally, as the reader might have already formed his own belief about certain issues before reading the book, counterarguments can challenge his view and, in some cases, lead to a permanent change of beliefs[\[52\]](#). So, for instance, if a reader intuitively thinks that machines could reach the capacities of a human brain, Casti's novel confronts him with some strong counterarguments. If the reader finds them convincing instead of Turing's arguments, and if he/she does not have a valid objection him/herself, Casti's novel might cause such a change of

beliefs[53].

Here, we can see what I mentioned earlier with respect to the epistemic value of literature: What makes this mode of presentation special compared to non-literary texts such as in thought experiments, non-fictional, or educational literature is that « stories cultivate our ability to see and care for particulars »[54] and thereby serve as 'training ground' to perceive relevant aspects of a situation[55]. Casti's fictive discussion gives a more detailed, multi-layered, and vivid account of how a scientific and philosophical debate works than any description in a textbook, where, indeed, you can find what an argument consists of, but not how to use it effectively while defending your position in real-life situations. What a reader learns from these discussions is practical knowledge in the sense that he sharpens his ability to reason (rationally and morally), and that he gets a feeling for how to engage in a sophisticated discussion. Also, he can gain theoretical knowledge by being presented with arguments he has not thought of before.

4.4 Internal focalisation and immersion

What Nussbaum states and what Köppe calls the cultivation hypothesis (« Kulturvierungshypothese ») can also be affirmed by what has been called « internal focalisation » in narratology, in other words: the perception of the environment through the eyes of a/the character. It is not only a special asset of literature to show courses of action from different perspectives, as mentioned before, but also to give insights into a character's innermost thoughts and feelings. Whereas in everyday life we can only observe others in their behaviour, mimics, and statements, literature gives us detailed accounts about what goes on inside a character's mind. These descriptions can sometimes turn out to be so vivid that we are being transported into the story, and it seems as though we experience the world within the fiction as if we *were* the character himself. What happens here is that, as David Novitz explains,

our imaginative involvement in fiction allows us to respond emotionally or feelingly to the tribulations and triumphs of creatures of fiction. It is as a result of these experiences [...] that we often come to hold certain beliefs about what it must feel like to occupy situations akin to those of our favorite heroes and heroines.[56]

Dorothy Walsh has coined this experience as « knowing by living through »[57], which is essentially the same kind of knowledge as « knowing how it is »[58]. There can be arguments found against a strong reading of Walsh's idea which question the quality of our experiences when living through something by reading a book compared to the experiences we actually go through. Still, works of literature can give us insight into how situations *can* feel like, e.g. in « Mendel's Dwarf ». As mentioned earlier, Benedict is afflicted with achondroplasia (i.e. dwarfism). He is exceptionally intelligent and after years of constant research on the gene that causes his condition, he becomes a respected member of the scientific community. His commitment to science sometimes even seems obsessive "' sometimes so obsessive that the reader struggles to understand him. After

Benedict meets his former crush Jean again, and they both become involved with each other, he experiences the following:

So it was in all-forgiving and all-absorbing darkness that we actually coupled. Sometimes it was funny "'no, at first it was always funny "' and sometimes it was ecstatic. Often we laughed; sometimes we wept; and occasionally, I had the sensation that I was almost freed from my bonds. Whoever, whatever, tied the knots of this tortured and twisted body of mine, for those few weeks Jean's agile fingers began to loosen them. Sometimes I felt that her perfect body was almost consuming my own, the beautiful engulfing the ugly, the good swallowing up the evil; but on other occasions I sensed that I was fouling her.[\[59\]](#)

What Benedict describes seems like a release from his condition through physical contact and loving engagement with Jean, but there are still moments when even in a state of intense experiences (« her perfect body was almost *consuming* my own ») he cannot entirely forget about his short stature (« almost freed », « almost consuming », « for a few weeks », « Jean's agile fingers *began* to loosen »). He is too much aware of his condition to be switched off for moments of pleasure, and he even draws a sharp contrast between Jean as the « perfect » and « agile », « beautiful » and « good », and him, the « ugly » and « evil », who even feels as if « fouling her ». Nevertheless, his longing for Jean becomes fully apparent when Benedict seems as though he has to get a grip of himself when he says: « You may have detected a change of tone in that passage. Benedict Lambert has lost his sharp, sour cynicism. But I'll bring it back, don't worry. »[\[60\]](#)

Firstly, we are taught that our impression of Benedict as an arrogant cynic is not entirely justified. Secondly, his showing to the reader how sad and self-loathing his existence can be, allows the opportunity to fully comprehend what Benedict suffers from emotionally, and that this even might be the reason for his obsession with genetics. Of course, one can argue that the reader does not really *live through* what Benedict has to undergo[\[61\]](#), since the average reader most likely does not suffer from achondroplasia. But even so the reader can still *become acquainted* with the consequences of Benedict's condition for his social life[\[62\]](#). So what the reader learns through internal focalisation is the view from within a character's mind which brings him to better understand what the character really feels when sometimes acting in a different way "' precisely one of the cognitive goals Scholz emphasises when claiming that we can become aware of unknown aspects when regarding persons or things[\[63\]](#).

Closely related to this view from within is what has been called immersion or narrative transportation. What happens when a reader is immersed in a work of art is often described as absorption or « recentering » of attention[\[64\]](#) by going through what Berys Gaut called « experiential imaginations »[\[65\]](#). Although it is not the place here to discuss this in detail, I would like to briefly mention one important aspect about immersion. Not all works of art have the same immersive quality ; some even are intended to *not* transport the reader by creating a distance e.g.

through formal features. A lot of theorists have tried to name characteristic features of literature that have the potential to transport its reader into the story world. Mostly, they agree upon two: the illusion of reality and the concealing of the artworks' mediatedness. These two features can be created in various ways, for example by employing vivid descriptions and language, avoiding formally complex and difficult specialties of style, and adhering to coherence and cohesion concerning the contents and the textual structure. In my following example, I shall show briefly what this means[66].

Again in « The Honest Look », shortly before Claire makes her devastating discovery, there is a moment when Claire's day to day life at the lab is described:

Claire was now completely captivated by her research. For the first time in her life, she was experiencing the crushing momentum familiar to a certain class of scientists who, once they sense the nearness of truth, cannot rest until it is captured. Yet this truth, safely on hand, only leads to more questions and further truths demanding to be revealed in turn. It is the momentum that wins Nobels and destroys relationships; the mind drives the body far beyond the limits of physical endurance. Sleep, food and companionship become secondary pursuits, sublimated into the need to do just one more experiment. In fact, most life scientists no longer do just one experiment at a time: hypothesis, experiment, conclusion, taking the luxury to ponder the next step before beginning the cycle anew. Instead, they multitask a dozen independent hypotheses at once each spawning yet more possible experiments. The scientist knows that only one of the dozen is likely to work, but twelve experiments in one week eliminates eleven bad ideas much faster than the same tests spread sequentially over twelve weeks. Through the blur of moments speeding by, one might hear one's wife say, *you'd be much more efficient if you got some sleep*, or one's husband murmur, *what difference will twelve weeks make in the grand scheme of your scientific career?* One might know these questions to be wise, but one simply cannot heed. One is in thrall. Claire was in thrall.[67]

Although the perspective can be described as internal focalisation[68], there is clearly more to it than a description from Claire's perspective. By evoking certain feelings that the average reader most likely is acquainted with and which therefore are quite realistic (such as the lack of sleep, stressful situations, the thrill of accomplishing something exceptional, or getting bogged down in too much work) he/she is able to empathise or sympathise with Claire[69]. The reader might pity or admire her; he/she can hope for her to find the truth she is looking for or he/she can wish for Claire's life to stop being so exhausting. Apart from that, the scientifically uninformed reader can compare Claire's experiences (and with it the experiences of scientists in general) to his own. That is what makes « narrative events seem more like personal experiences »[70]. What the reader knows in a rather personalised way is, in this passage, refined with respect to the special situation of a

scientist. Thereby the reader is being shown what it is like to be a scientist when the author uses vivid pictures and language: Together with Claire, the reader is « captivated » and is « experiencing the crushing momentum » that « wins Nobels and destroys relationships » and « the limits of physical endurance » which puts a person « in thrall » when coming to grasp truths. Finally, « transportation [contrary to representative discussion and the demonstration of options] reduces counterarguing about the issues raised in the story »[\[71\]](#) because, in this case, the narration from Claire's perspective is not interrupted by a different perspective. So, what the reader learns from this passage is what it is like to be a scientist: he/she learns that the scientific search for truth can be a passionate, yet sometimes obsessive process and that the commitment to it can even feel self-destructive, slave-like, and blurry. It is worth here to note that this knowing how it is like to be a scientist can also be articulated as e.g.: « I know that it is exhausting to be a scientist ». This knowing that as verbalisation of knowing how it is like does not imply that this works in both directions: When a reader knows that it is exhausting to be a scientist he might still not know what it is like. To know what it is like requires him/her to have gone through the same or a similar experience. Even though literature might not evoke the *actual* experience it still can give an in-depth look and might at least *suggest* what it is like.

So, for someone not acquainted with the everyday life of scientists or for someone who even espouses the romantic idea of scientists as great explorers and inventors who are somewhat sympathetic coots, passages such as the one above might function as an eye-opener. Especially narrative transportation can count as an effective device for the reader to adopt a new view, as most prominently Melanie Green has shown in various empirical studies[\[72\]](#).

5. Conclusion

As I have shown, there is a variety of devices that facilitate our learning from literature and there surely are more of them to be discussed, especially when aiming for a systematic account. But what makes it worth to look further into knowledge conveying devices in literature ? I claimed earlier that the epistemic value of literature is genuine compared to the one scientific literature has. If nothing else, it is because such devices are employed, that this value is formed. Simplification has proven to reduce very (and sometimes too) complex states of affairs for the average reader so that he can follow more easily. Exemplification gives the reader a concretisation of what is oftentimes too difficult to understand or too farfetched to imagine when explained in a general or abstract way. The demonstration of options and representative discussions can teach us about alternatives and different angles when reflecting upon a certain state of affairs. Moreover, they can even sharpen our faculty of judgment, for example when confronted with complex moral dilemmas. Similarly, internal focalisation shows us the innermost feelings and thoughts of others so that we can better understand what drives them and what leads them to certain decisions. Finally, the immersive quality of literature can give us an impression of

what it is like to be in a certain situation or to feel like someone else. Not all of these devices are exclusively literary, but combined with what distinguishes literature from other sorts of texts (Mawer's « imagination and fantasy » vs. « logic and facts »), their full potential can be unfolded.

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[1] In what follows I shall use the term 'literature' synonymously for both, works of fiction and works of literature.

[2] For an overview see T. Köppe, « Literatur und Wissen: Zur Strukturierung des Forschungsfeldes und seiner Kontroversen » in T. Köppe (dir.), *Literatur und Wissen. Theoretisch-methodische Zugänge*, Berlin and New York, Walter de Gruyter, 2011, p. 1-28.

[3] For some prominent cognitivist and anti-cognitivist positions see B. Gaut « Art and Knowledge » in J. Levinson (dir.), *The Oxford Handbook of Aesthetics*, Oxford, Oxford University Press, 2003, p. 437.

[4] These approaches are not exclusively German in origin. 'Poetics of knowledge', for instance, draws on ideas from Michel Foucault or Gaston Bachelard and analytical literary critics (like Oliver R. Scholz whose view I shall discuss below) adopt ideas from American philosophers like Nelson Goodman and Catherine Elgin.

[5] M. Titzmann, *Strukturelle Textanalyse. Theorie und Praxis der Interpretation*, München, Fink, Third Edition, 1993, p. 268. Titzmann hereby speaks of 'cultural assumptions' and refers to the wider concept of knowledge in the social constructivism of Peter L. Berger and Thomas Luckmann: M. Titzmann, « Kulturelles Wissen – Diskurs – Denksystem. Zu einigen Grundbegriffen der Literaturgeschichtsschreibung », *Zeitschrift für französische Sprache und Literatur*, n° 99, 1989, p. 48 ; K. Richter, J. Schönert and M. Titzmann, « Literatur – Wissen – Wissenschaft. Überlegungen zu einer komplexen Relation. » in K. Richter, J. Schönert and M. Titzmann (dir.): *Die Literatur und die Wissenschaften 1770–1930 (Walter Müller-Seidel zum 75. Geburtstag)*, Stuttgart, M&P Verlag für Wissenschaft und Forschung, 1997, p. 9-36.

[6] Titzmann, *Textanalyse*, op. cit., p. 268.

[7] Titzmann, *Textanalyse*, op. cit., p. 272 sq.

[8] Richter et al., *op. cit.*, p. 29 sq.

[9] J. Vogl, *Kalkül und Leidenschaft. Poetik des ökonomischen Menschen*, München, Sequenzia, 2002, p. 13.

[10] N. Pethes, « Poetik/Wissen. Konzeptionen eines problematischen Transfers », in G. Brandstetter and G. Neumann, (dir.), *Romantische Wissenspoetik. Die Künste und die Wissenschaften um 1800*, Würzburg, Königshausen&Neumann, 2004, p. 367. The expression 'producing/production of knowledge' can be considered a prominent phrase in poetics of knowledge. It refers to the assumption mentioned above that what we consider knowledge is a construct.

[11] J. Vogl, « Einleitung » in J. Vogl (dir.), *Poetologien des Wissens um 1800*, München, Fink, 1999, p. 13.

[12] Introductory remarks can be found in R. Audi, *Epistemology. A Contemporary Introduction to the Theory of Knowledge*. Third Edition, London and New York, Routledge, 2011, ch. 10, J.J. Ichikawa and M. Steup, « The Analysis of Knowledge » in E.N. Zalta (dir.), *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), <http://plato.stanford.edu/archives/spr2014/entries/knowledge-analysis/>, accessed 2014-05-07, and P. Baumann, *Erkenntnistheorie. Lehrbuch Philosophie*, Stuttgart and Weimar, Metzler, 2002, ch. II.2.

[13] Ichikawa and Steup, « Analysis », *op. cit.*

[14] Baumann, *Erkenntnistheorie*, *op. cit.*, p. 29.

[15] T. Nagel, « What is it like to be a Bat » in T. Nagel, *Mortal Questions*, Cambridge, Cambridge University Press, 1981, p. 168 sq.

[16] T. Köppe, *Literatur und Erkenntnis*, Paderborn, mentis, 2008, p. 61.

[17] *Ibid.*, p. 161. Köppe uses the phrase « anhand von Literatur » or « anhand der fiktiven Welt »: « Leser können anhand der fiktiven Welt eines Werkes Hypothesen über die Wirklichkeit bilden ('Wirklichkeitsbezug im weiteren Sinne'). » (*Ibid.*, p. 106, emphasis in original)

[18] N. Goodman and C. Elgin, *Reconceptions in Philosophy and Other Arts and Sciences*, London, Routledge, 1988, p. 4.

[19] O. R. Scholz, « Kunst, Erkenntnis und Verstehen. Eine Verteidigung einer kognitivistischen Ästhetik » in B. Kleimann and R. Schmücker (dir.), *Wozu Kunst? Die Frage nach ihrer Funktion*, Darmstadt, Wissenschaftliche Buchgesellschaft, 2011, p. 39.

[20] P. Lamarque, *The Philosophy of Literature*, Malden Mass./Oxford/Carlton, Victoria, Blackwell Publishing, 2009, p. 250 sq.

[21] In the original practical knowledge is defined as « gut begründete wertende Einstellungen, in denen eine Person feststellt, dass eine Handlung oder Lebensweise für sie gut, ratsam oder richtig ist » (Köppe, *Literatur und Erkenntnis*, *op. cit.*, p. 168, emphasis in original).

[22] See for these remarks M. Polanyi, *Personal Knowledge. Towards a Post-Critical Philosophy*, Chicago, The University of Chicago Press, 1958, p. 56.

56. This hardly expressible kind of knowledge Polanyi labelled 'tacit knowledge'. See for the discussion of the 'tacit component' *Ibid.*, Part II.

[23] « Es genügt nicht, ein wertendes Gefühl zu haben, sondern wir müssen es auch thematisieren und zu begründen versuchen. » (Köppe, *Literatur und Erkenntnis*, *op. cit.*, p. 181).

[24] *Ibid.*, p. 185 sq.

[25] *Ibid.*, p. 186.

[26] Original: « Kunstwerke können unsere sensorischen Unterscheidungsfähigkeiten erweitern und kultivieren; sie erschließen uns Züge an Dingen und Personen, die uns sonst verborgen blieben; sie bieten neue Schemata zur Kategorisierung und Ordnung von Wirklichkeiten an; sie schulen die moralische Phantasie und das moralische Urteilsvermögen; sie bereichern und differenzieren unsere emotionale Sensitivität und unsere Selbsterkenntnis; schließlich können sie uns grundsätzlich sogar zu wahren Meinungen und in der Folge auch zu Wissen verhelfen. » (Scholz, « Kunst, Erkenntnis und Verstehen », *op. cit.*, p. 48)

[27] S. Gaines, « Sex, love, and science », *Nature*, n° 413, 2001, p. 255.

[28] M. M. Raml, *Der « homo artificialis » als künstlerischer Schöpfer und künstliches Geschöpf. Gentechnologie in Literatur und Leben*, Würzburg, Königshausen&Neumann, 2010, p. 218.

[29] C. Djerassi, « Science-in-fiction is not science fiction. Is it autobiography? » in C. Djerassi, *This Man's Pill. Reflections on the 50th Birthday of the Pill*, Oxford, Oxford University Press, 2003, p. 165.

[30] S. Mawer, « Science and Literature », *Nature*, n°434, 2005, p. 298.

[31] *Ibid.*, p. 297.

[32] E.g. B. Gaut « Art and Knowledge » in J. Levinson (dir.), *The Oxford Handbook of Aesthetics*, Oxford, Oxford University Press, 2003, p. 444 or D. Novitz, *Knowledge, Fiction, and Imagination*, Philadelphia, Temple University Press, 1987.

[33] E. John, « Literature and Knowledge » in B. Gaut and D. Lopes (dir.), *The Routledge Companion to Aesthetics. Second Edition*, London, Routledge, 2005, p. 420 ; B. Gaut « Art and Knowledge », *op. cit.*, p. 437.

[34] A. Lightman, *Einstein's Dreams*, London, Corsair, 2012, p. 69 sq.

[35] A. Einstein, « On the Electrodynamics of Moving Bodies » in H.A. Lorentz and A. Einstein, *The Principle of Relativity. A Collection of Original Memoirs on the Special and General Theory of Relativity*, transl. by G. B. Jeffery and W. Perrett, London, Methuen and Company Ltd., 1923, www.fourmilab.ch/etexts/einstein/specrel/www/, (accessed 2014-05-07), § 2.

[36] *Ibid.*, emphasis in original.

[37] Djerassi, « Science-in-fiction », *op. cit.*, p. 165.

[38] S. Gaines, « Sex, love, and science », *op. cit.*, p. 255.

[39] R. Goldstein, *The Mind-Body Problem. A Novel*, New York, Penguin Books, Repr. 1993, p. 40.

[40] C. Djerassi, *Cantor's Dilemma. A Novel*, New York, Penguin Books, Repr. 1991, p. 48 sq.

[41] Scholz, « Kunst, Erkenntnis und Verstehen », *op. cit.*, p. 43.

[42] Cf. W. Grünzweig, « Science-in-Fiction: Science as Tribal Culture in the Novels of Carl Djerassi » in P. Freese and C. B. Harris (dir.), *Science, Technology, and the Humanities in recent American Fiction*, Essen, Blaue Eule, 2003, p. 246.

[43] Several references are given in Köppe, *Literatur und Erkenntnis*, *op. cit.*, p. 182.

[44] Köppe, *Literatur und Erkenntnis*, *op. cit.*, p. 183 ; a similar thought has been pointed out by Scholz, « Kunst, Erkenntnis und Verstehen », *op. cit.*, p. 45.

[45] J. L. Rohn, *The Honest Look*, New York, Cold Spring Harbor, 2010, 102 sq.

- [46] Here one can see clearly Scholz's criticism towards the concept of theoretical knowledge. Goodman and Elgin, whose theory he draws on, speak of 'understanding' as « broader in scope than knowledge » (Goodman and Elgin, *Reconceptions*, op. cit., p. 161). When it comes to understand what makes a person act in a certain way, it is about right or wrong, good or bad, or if we would act in the same way, and this is what strengthens the notion of understanding as a cognitive asset.
- [47] Scholz, « Kunst, Erkenntnis und Verstehen », op. cit., p. 45.
- [48] J. L. Casti, *The Cambridge Quintet. A Work of Scientific Speculation*, Massachusetts, Addison-Wesley, 1998, p. 67, emphasis in original.
- [49] *Ibid.*, p. 68.
- [50] *Ibid.*
- [51] S. Mawer, *Mendel's Dwarf*, London, Abacus, 2011, p. 25.
- [52] Similarly D. Novitz, « Fiction and the Growth of Knowledge » in J. Margolis (dir.), *The Worlds of Art and the World*, Grazer Philosophische Studien, n°19, 1893, p. 62 sq.
- [53] Belief change is often discussed as a potential outcome when learning from literature in analytic philosophy of aesthetics but there are also empirical analyses that confirm belief change through art in general and in different time stages: short- and middle-term but also long-term belief change. For a detailed empirical study on belief change through fiction see M. Appel, *Realität durch Fiktionen: Rezeptionserleben, Medienkompetenz und Überzeugungsänderungen*, Berlin, Logos, 2004.
- [54] M. Nussbaum, « Perceptive Equilibrium. Literary Theory and Ethical Theory » in M. Nussbaum, *Love's Knowledge. Essays on Philosophy and Literature*, Oxford/New York, Oxford University Press, 1990, p. 184.
- [55] Köppe, *Literatur und Erkenntnis*, op. cit., p. 187 ; also John, « Literature and Knowledge », op. cit., p. 424.
- [56] Novitz, *Knowledge*, op. cit., p. 120.
- [57] See D. Walsh, *Literature and Knowledge*, Middletown, Connecticut, Wesleyan University Press 1969.
- [58] Lamarque, *Philosophy*, op. cit., p. 244 sq.
- [59] Mawer, *Mendel's Dwarf*, op. cit., p. 183.
- [60] *Ibid.*
- [61] Köppe, *Literatur und Erkenntnis*, op. cit., p. 200.
- [62] Scholz, « Kunst, Erkenntnis und Verstehen », op. cit., p. 45.
- [63] *Ibid.*, p. 48.
- [64] M.-L. Ryan, *Narrative as Virtual Reality. Immersion and Interactivity in Literature and Electronic Media*, Baltimore/London, John Hopkins University Press, 2001, p. 103.
- [65] B. Gaut, *Art, Emotion and Ethics*. Oxford, Oxford University Press, Repr., 2011, p. 151.
- [66] For a more detailed discussion of the creation of immersion see K. Lukoschek, « Literarische Welten in der text world theory: Zur Beschreibbarkeit von Immersion am Beispiel eines Auszugs aus Truman Capotes *Other Voices, Other Rooms* » in Christoph Bartsch/Frauke Bode (dir.), *Welten erzählen. Narrative Evokationen des Unmöglichen*, Berlin/New York, de Gruyter, 2015 (forthcoming).
- [67] J. L. Rohn, *The Honest Look*, op. cit., p. 83, emphasis in original.
- [68] At least, a part of this passage can be described as narrated through Claire's eyes. The other part, from which it is not clear if it is told

from Claire's perspective or that of an omniscient narrator, can still be traced back to someone who knows his way around science.

[69] Lamarque, *Philosophy*, *op. cit.*, p. 246.

[70] M. C. Green and K. E. Dill, « Engaging with Stories and Characters: Learning, Persuasion, and Transportation into Narrative Worlds » in K. E. Dill (dir.), *The Oxford Handbook of Media Psychology*, 2012, www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195398809.001.0001/oxfordhb-9780195398809-e-25 (accessed 2014-05-07), p. 4.

[71] *Ibid.*

[72] One relevant empirical survey can be found in M.C. Green, J. Garst, T.C. Brock, S. Chung, « Fact versus fiction labeling: Persuasion parity despite heightened scrutiny of fact », *Media Psychology*, n° 8, 2006, p. 267-85.