Research Journal

Journal de recherches

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Introduction

Mrs. Vicky Tuck
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C'est avec plaisir que je vous présente cette nouvelle édition de notre journal de recherche, journal qui accompagne le travail pratique de nos directeurs de l'institut d'apprentissage et d'enseignement à l'Ecole Internationale de Genève.

Once again the journal invites us to think about *what* we teach and *how* children learn. Yet again, the role of language and how we interpret what we mean by a child-centred approach are explored. I particularly commend to you the fascinating article by Dr Joanna Ratynska on the Tomatis therapy associated with training students to listen. It serves to remind us of how much learning is hindered if the ability to listen is limited. So often, when I observe teachers in our Early Years and Primary schools, I am struck by how well they draw the students to a state of being attentive, being receptive. As our students move up through the school, these foundations of active listening are critical as they develop their powers of analysis, expression and collaboration with each other.

Language and philosophy for children are the subject of an article by Professor Michel Sasseville. Nous avons la chance de développer ce programme de philosophie pour les enfants à l'école primaire de la Grande Boissière et ce sera passionnant de faire une étude longitudinale pour estimer l'impact sur nos élèves au fur et à mesure qu'ils avancent vers l'âge adulte.

Our relationship with Durham University is another of the distinctive cornerstones of the work of the Institute. Professor Steve Higgins' article providing a comparative synthesis of evidence from educational interventions, together with a cost/benefit analysis in terms of additional expenditure for schools raises some interesting questions about where to place our attention and indeed our investment of resources. His recommendation that working on maximising the quality of feedback is one area of focus that is likely to have greatest impact on student progress confirms what we have known from studies by John Hattie. As it is for children, so it is for adults. We all should welcome constructive feedback on our work.

Finally, I was delighted to read a touching article by my new colleague, Karen Taylor, Director of Education about eighteenth century writer, Louise d'Épinay. In her *Conversations d'Émilie* (1774), a pedagogical work in the form of conversations between d'Epinay and her daughter, Émilie, she eloquently reminds us that the purpose of our education, child-centred that it is, is to steer our students towards independence in adulthood. This long term goal underpins, I would suggest both the nurture and the rigour of our educational construct: "*When you take care to cultivate your reason, to adorn it with useful and sound knowledge, you open so many new sources of pleasure and of satisfaction; you prepare so many means to embellish your life, so many resources against boredom, so many consolations in adversity… this is wealth that no one can take away from you, that will free you from dependence on others…*"

My thanks to all who have contributed to this publication.

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Evidence use by teachers: understanding the Teaching and Learning Toolkit
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Steve Higgins is Professor of Education at Durham University. A former primary school teacher, he has an interest in a number of areas of education research. These include the effective use of digital technologies for learning in schools, strategies to promote more complex thinking and classrooms combined with the role of meta-cognition in learning, and the development of children's logical thinking and reasoning. He has a particular interest in the use of research evidence by teachers and is the lead author of the Sutton Trust- Education Endowment Foundation Teaching and Learning Toolkit.

Overview

This article describes the background and main findings from the Sutton Trust- Education Endowment Foundation Teaching and Learning Toolkit, which provides a comparative synthesis of evidence from educational interventions, together with a cost/benefit analysis in terms of additional expenditure for schools and an assessment of the robustness of the evidence. The findings provide some challenges to thinking about effective teaching and learning, which indicates that such evidence has an important role to play in developing professional expertise. A final section argues for the importance of an understanding of education research to inform teachers' professional decision-making. Research evidence of what has been successful in another context does not guarantee it will be successful in a different school, with different teachers and different pupils. However it provides a good guide, or a good bet, about what is likely to be successful and this can be understood as providing valuable information about the risks and potential benefits of evidence-based approaches.

Background

In 2010-11 the Sutton Trust funded a team of researchers at Durham University to analyse the existing education research evidence and produce a 'Which'-style consumer report to provide advice to schools on how to spend the new Pupil Premium (Higgins, Kokotsaki and Coe 2011a), a policy to improve attainment for children from disadvantaged backgrounds. This was then adopted by the Education Endowment Foundation (EEF) and updated (Higgins, Kokotsaki and Coe 2012a) to support the work of the Foundation in tackling disadvantage in schools, both in terms of providing information to schools about how to spend any additional resource and to support the commissioning of new research by EEF in areas of promise. In 2013 the UK Government identified the Toolkit website as the 'What Works' Centre for schools. The aim of the Toolkit is to develop a comparative analysis of the human and financial costs and the educational benefits associated with a range different approaches to

support teaching and learning in schools, and which helps schools improve outcomes for learners, particularly those from disadvantaged backgrounds. It is all too easy to spend time, money and energy in schools in what looks like sensible or effective ways, but without finding any discernible impact on the achievement of pupils (Levačić & Vignoles, 2002; Hanushek & Woessman, 2010).

The Toolkit

The 'Teaching and Learning Toolkit' sets out a range of different approaches to improve learning in schools, assesses the quality of the evidence, identifies how well each approach has worked from more than 80 meta-analyses (these are reviews of research with quantitative data from well-controlled studies). It then includes an estimate of the spending needed to achieve these outcomes so an idea of the cost / benefit can be provided. The approach is similar to that of Hattie's (2005) Visible Learning, but the emphasis is on educational interventions which have been evaluated and an estimate of how efficient different approaches are, as well as how effective. A range of approaches were selected for analysis and inclusion, based on approaches commonly mentioned in connection with education policy for the Pupil Premium in England, but also suggestions from schools and teachers, along with approaches with strong evidence of effectiveness. Unlike other approaches to summarising evidence areas are included where the evidence is weak or limited, or show little impact, but where approaches are commonly adopted by schools.
The potential gain in attainment is estimated in terms of the additional months progress you might expect pupils to make as a result of an approach being used successfully in school, taking average pupil progress over a year as a benchmark. For example, if an effective feedback intervention has an impact of nine months progress, it means that, for two classes of pupils which were equivalent before the intervention, afterwards the class which adopted the effective feedback intervention would be outperforming the control class by a large margin. The average pupil in a class of 25 pupils in the feedback class would now be equivalent to the 6th best pupil in the control class, having made 21 months progress over the year, compared with an average of 12 months normal progress in the other class. These estimations are based on the 'effect sizes' reported in research studies. Effect sizes are quantitative measures of the impact of different approaches on learning. The Toolkit prioritizes systematic reviews of research and quantitative syntheses of data such as meta-analyses of experimental studies. To be included in the analysis an approach needed to have some quantifiable evidence-base for comparison. Cost estimates are based on the approximate cost of implementing an approach for a class of thirty pupils. Where the approach does not require any additional resource, estimates are based on the cost of training or professional development which may be required.

An estimate of the quality of the evidence is also made based on the availability of evidence from the number of systematic reviews or meta-analyses and the quantity of primary studies which they synthesize. This quality estimate is also based on the methodological quality of the primary evidence and the reliability or consistency of this impact across the meta-analyses and other studies reviewed. Technical appendices set out the rationale for the evaluation of the evidence in full (Higgins, Kokotsaki and Coe 2012b).

Although there are clearly limitations to the application of quantitative synthesis in this way, the data from meta-analysis offers the best source of information to try to answer comparative questions between different areas of educational research. It is hard to compare areas without some kind of benchmark. If you have two narrative reviews, one arguing that, say, parental involvement works and another arguing that digital technology is effective, and both cite studies with statistically significant findings showing they each improve reading comprehension, it is hard to choose between them in terms of which is likely to offer the most benefit. Meta-analysis certainly helps to identify which researched approaches have made, on average, the most difference, in terms of effect size, on tested attainment of pupils in reading

comprehension or other areas of attainment. We suggest that this comparative information should be treated cautiously, but taken seriously. If effect sizes from a series of meta-analysis in one area, such as meta-cognitive interventions for example, all tend to be between 0.6 and 0.8, and all of those in another area, such as individualized instruction, are all between -0.1 and 0.2, then this is persuasive evidence that schools should investigate meta-cognitive approaches to improve learning, rather than focus on individualized instruction. Some underlying assumptions are that the research approaches are sufficiently similar (in terms of design for example), that they compared sufficiently similar samples or populations (of school pupils) with sufficiently similar kinds of interventions (undertaken in schools) and similar outcome measures (standardized tests and curriculum assessments). So, if you think that a meta-analysis of intervention research into improving reading comprehension has a set of broadly similar set of studies, on average, to a meta-analysis investigating the development of understanding in science, then you might be tempted to see if any approaches work well in both fields (such as reciprocal teaching) or, indeed, do not work well in both fields (such as individualized instruction). Our argument is that so long as you are aware of the limits of the inferences drawn, then the approach has value. We suggest that this provides the best evidence we have so far, particularly where we have no studies providing direct comparisons.

The findings

There are some surprises in the findings. For example, teaching assistants (TAs) make less of an impact than many schools expect, especially considering that this is one of the most popular ways schools in England spend the additional funding (Ofsted, 2012). On average, classes with TAs make only the same progress as classes without TAs. This finding comes from research in the USA (Gerber et al. 2001) and in the UK (Blatchford et al. 2009). This does not mean that teaching assistants do not have any effect on learning. It suggests about half are deployed in a way which has a positive effect and about half in ways which are ineffective or detrimental to learning. However Blatchford et al.'s (2009) study in the UK indicated that the more support pupils received from TAs the *less* well they did in terms of attainment. This means that it is vitally important to work out how support staff can best support pupils' learning as, on average, this is does not happen just by them being present in the classroom or in the typical ways that schools choose to use them.

Similarly with a popular approach like ability grouping, the benefits are most apparent only for high attaining students. FSM (Free school meals) pupils are much more likely to be in lower sets or groups, and the impact over time on their performance of ability grouping tends to be negative, particularly on their beliefs about themselves as learners and their aspirations, so schools should think about how they can mitigate this probable detrimental impact, perhaps by significantly reducing the size of lower sets (to about 15) and certainly by increasing the amount of effective feedback in teaching these groups.

Some approaches are just too expensive to be able to recommend in terms of cost benefit. Smaller classes, for example, only really make a difference to learning when the class size is between 14-17 pupils. Larger classes are clearly more demanding and stressful for teachers, but reducing a class of 30 to 25 does not make much difference to attainment (Hattie, 2005). This is because the reduction in numbers of pupils will only make a difference where the teaching and learning interactions and behaviours change in the classroom. Three or four fewer pupils may feel easier to manage, but unless the learners are getting more feedback from the teacher, or working harder in some way, or learning more effectively from each other, their progress will not change.

One-to-one tuition is effective, but relatively expensive (see Figure 1). However in this case the evidence also supports the use of pairs and small groups for additional support as the impact is very similar (Torgerson et al. 2011). This immediately doubles or triples the cost/benefit. Also the evidence supports such intensive tuition for shorter rather than longer periods of time (four or five times a week for about 8 weeks). Of course you also have to factor in what the pupils will miss out on when they are being taught intensively and ensure that the reasons for them falling behind are also addressed when the support is withdrawn.

TEACHING & LEARNING TOOLKIT TOPIC	COST	EVIDENCE	IMPACT
Meta-cognition and self-regulation	£ £ £ £ £	🔒🔒🔒🔒🔒	+8 months
Feedback	£ £ £ £ £	🔒🔒🔒🔒🔒	+8 months
Peer tutoring	£ £ £ £ £	🔒🔒🔒🔒🔒	+6 months
Early years intervention	£ £ £ £ £	🔒🔒🔒🔒🔒	+6 months
Mastery learning	£ £ £ £ £	🔒🔒🔒🔒🔒	+5 months
Collaborative learning	£ £ £ £ £	🔒🔒🔒🔒🔒	+5 months
One to one tuition	£ £ £ £ £	🔒🔒🔒🔒🔒	+5 months
Oral language interventions	£ £ £ £ £	🔒🔒🔒🔒🔒	+5 months
Homework (Secondary)	£ £ £ £ £	🔒🔒🔒🔒🔒	+5 months
Reading comprehension strategies	£ £ £ £ £	🔒🔒🔒🔒🔒	+5 months
Behaviour interventions	£ £ £ £ £	🔒🔒🔒🔒🔒	+4 months

Figure 1: The most effective strategies in the Toolkit

The encouraging implication is that many of the things that are most effective are relatively inexpensive - such as improving the quality of feedback to pupils about their learning, or supporting them in planning, monitoring, reviewing and evaluating their learning ('meta-cognition') can all be tackled through professional development and systematic professional inquiry. Again the evidence suggests that this can best be achieved by working in small teams to implement strategies and tracking the impact of any new initiative on the processes and outcomes of learning (Timperley, 2008). Feedback is highlighted in the 'Toolkit' as potentially the most valuable area to develop, but it is also an area with the widest spread of effects. This suggests that when researchers and teachers tackle this area there is important potential for

improvement, but that some attempts have had negative effects. The evidence therefore suggests that, on average, working on improving feedback to learners is a good bet to bring about improvement, but that there is a small risk that you might get this wrong and make things worse.

Overall the approaches which are less effective tend to focus on organizational or managerial issues such as ability grouping, changing the timetable or performance pay. This emphasizes the importance of spending the money in a way which can directly influence the learning of the pupils it aims to support. School uniforms, for example, may be identified as one of the features associated with an improving school, particularly one where behaviour and the development of a positive school ethos were an important focus. Wearing a school uniform by itself, however, will not improve attainment, though it may be part of a process which creates more effective conditions for learning. A focus for improvement it is therefore a risky bet, as, on average, schools who have introduced uniforms have not improved attainment. To be precise about what this means, it indicates that about half of them have and half of them have not. If you decide you are going to introduce a school uniform to improve learning, you need to have a clear rationale for why you think your approach will succeed, as, on average, other people have not.

Performance pay	£ £ £ £ £	🔒 🔒 🔒 🔒 🔒	0 months
Physical environment	£ £ £ £ £	🔒 🔒 🔒 🔒 🔒	0 months
School uniform	£ £ £ £ £	🔒 🔒 🔒 🔒 🔒	0 months
Block scheduling	£ £ £ £ £	🔒 🔒 🔒 🔒 🔒	0 months
Aspiration interventions	£ £ £ £ £	🔒 🔒 🔒 🔒 🔒	0 months
Setting or streaming	£ £ £ £ £	🔒 🔒 🔒 🔒 🔒	-1 month
Repeating a year	£ £ £ £ £	🔒 🔒 🔒 🔒 🔒	-4 months

Figure 2: The least effective strategies in the Toolkit

The importance of engagement with research

There are, of course, no guarantees when drawing lessons from the research evidence. It is not a panacea. The Toolkit summarizes approaches which have been effective in the past, across a range of different schools and when used by different teachers with different pupils. The quality of the evidence, even with the strict inclusion criteria adopted for the Toolkit, is still variable. This mean that the potential gain identified will not automatically be achieved in a new context. Each school will need to work out what is likely to be the most effective approach for their particular school and their pupils, and then monitor the impact to ensure that any new approach or any spending of additional funding is effective in actually improving the learning of the disadvantaged students it seeks to help. What the Toolkit aims to do is to provide

information about how different approaches have (and have not) been successful in other contexts as a guide to where there is likely to be potential benefit as a 'good bet' or more of a risky choice. The evidence suggests that this is not always straightforward, as many of the approaches we intuitively believe will be beneficial for attainment, such as smaller classes or additional adult support, are not the best bets to improve learning that we think they are.

This may not seem an encouraging message as there are no guarantees that the application of research will be of benefit to a specific class or a particular pupil or help an individual teacher with a specific goal. However not being aware of what the research says is a much more dangerous position. The research shows that some of the things that we instinctively believe are effective may need to be questioned. In the UK there are about 232,000 teaching assistants and this accounts for about £4 billion a year of education spending. Research indicated that the average effect of a school's typical deployment on pupils' attainment was zero (Blatchford et al. 2009). Even if we could only improve the efficiency of a small proportion of this it could make a significant difference to children's educational prospects in the UK. Schools also need to think about whether their deployment, training and support for teaching assistants is typical or, if they are confident their approach helps children's learning, why they are confident that what they do is above average. Most schools are convinced that their deployment is effective, but about half of them must be wrong!

Evidence from research also indicates where teachers and schools need to think more carefully about any new initiative or change. If you choose an area where results, on average, tend to be successful, this suggests your pupils are likely to benefit, but you still need to evaluate to be sure. If you choose one of the risky bets, you probably need to evaluate the impact much more carefully and much more thoroughly. Overall the variation within each Toolkit theme is greater than the variation between themes. This means even for the most successful approaches there have been some disasters with a negative impact, and the least successful approaches have also had their successes. Knowing from research what might help as you undertake a new initiative will increase your chances of success, but in both circumstances you need to evaluate what actually happens in practice (see figure 3).
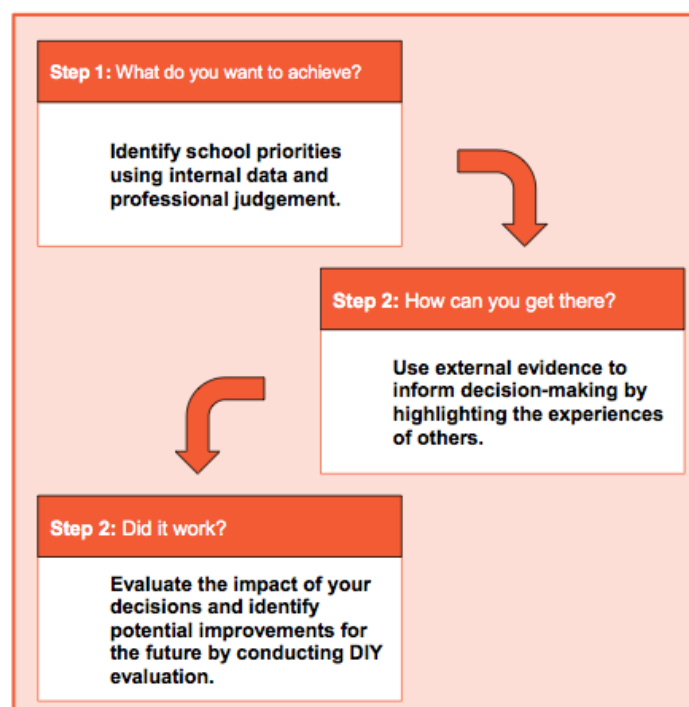
Step 1: What do you want to achieve?

Identify school priorities using internal data and professional judgement.

Step 2: How can you get there?

Use external evidence to inform decision-making by highlighting the experiences of others.

Step 2: Did it work?

Evaluate the impact of your decisions and identify potential improvements for the future by conducting DIY evaluation.

Figure 3: A model for evidence use

A final way of thinking about this is that research offers a host of potential solutions to educational challenges and specific teaching and learning problems. However it is not always easy to tell what question they are the answer to. If you think about children developing reading skills, both phonics and developing comprehension strategies have been shown by research to be successful. However you need to know if a particular child or children in a class are having difficulties in decoding the words they are reading.   This will often be the case for younger readers and older readers who have not mastered the complicated sound/symbol combinations in English. However they may also be having difficulty making meaning from the words they read, either related to the vocabulary or grammar and aspects of language like sequencing, inference or summarising – here approaches developing readers' strategies in comprehension are likely to help. The more you know about a child or children's difficulties, the more likely you are to find an effective research-based solution. Effective diagnosis is essential. Much of this knowledge is implicit and this is where the research and teaching professions need to work more closely together so that we can match the questions and solutions more easily and more effectively.

The Teaching and Learning Toolkit aims to be a starting point. It should raise questions and provide some challenge about some things we do in schools which may not, on average, be as effective as we think. It should also provide support in encouraging teachers and schools to try out approaches which have stronger evidence or greater impact to see whether they can be successful in a new context by providing a gateway to the enormous quantity of available research in education.

Links to further information

The full report can be found on the EEF's website:
http://educationendowmentfoundation.org.uk/toolkit/

With information about the background to the analysis:
http://educationendowmentfoundation.org.uk/uploads/pdf/Technical_Appendices_(July_2012).pdf

The toolkit is recommended by the Department for Education:
http://www.education.gov.uk/schools/pupilsupport/premium/b00200492/ppstrategies

Official information about the Pupil Premium and LA allocations is available at:
http://www.education.gov.uk/schools/adminandfinance/financialmanagement/schoolsrevenuefunding/a00200697/pupil-premium-2012-13

Ofsted's report is available at: http://www.ofsted.gov.uk/resources/pupil-premium

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PSYCHOMÉCANIQUE DU LANGAGE ET PHILOSOPHIE POUR LES ENFANTS

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Docteur en philosophie, Michel Sasseville est professeur titulaire à la Faculté de philosophie de l'Université Laval (Québec). Responsable des programmes de formation en Philosophie pour les enfants dans cette université, il travaille au développement de cette pratique, selon l'approche de Matthew Lipman, depuis 30 ans. Professeur invité à l'Université Iberoamericana de Mexico, au Montclair State University au New Jersey et l'Université du Sud de la Bohème en République Tchèque, il a été président du Conseil international de recherches philosophiques avec les enfants entre 1997 et 1999. Il est collaborateur principal au centre La Traversée pour le programme de prévention de la violence et philosophie pour les enfants. Il a publié 8 livres, des dizaines d'articles portant sur la philosophie pour les enfants et a reçu de nombreux prix d'excellence pour son cours en ligne L'observation en philosophie pour les enfants.

Résumé

Dans son dernier livre théorique paru en 2003, *Thinking in Education,* Matthew Lipman indiquait qu'en philosophie pour les enfants, nous avons besoin d'une théorie des actes la pensée, car sans elle le travail, qui attend ceux et celles qui pratiquent cette discipline et qui ont à cœur de mettre l'accent sur la formation de la pensée en action, risque d'être sans effet appréciable. Pour faire un pas dans cette direction, il semblait clair à ses yeux qu'il serait approprié de tenir compte, notamment, des recherches qui ont accordé une attention aux locutions performatives. Car, ajoutait-il, le langage est, en un sens, une carte de l'esprit. Dans cet article, je souhaite faire un pas de plus, m'engager dans le chemin tracé par Lipman, mais en faisant appel cette fois à un linguiste, Gustave Guillaume – et la science linguistique dénommée psychomécanique du langage - qui a consacré l'essentiel de ses efforts, en tant que linguiste, à comprendre comment la pensée construit le langage en se construisant par le langage. Dans un premier temps, j'exposerai les principales articulations de la théorie de Guillaume concernant le langage, en me concentrant sur les distinctions qu'il y a lieu d'établir

entre la langue (terme proposé initialement par Saussure en 1916) et le discours (dans sa reconstruction de la théorie de Saussure, Guillaume a remplacé le terme «parole» par «discours»).

Ces deux réalités s'opposent à plus d'un égard. Ainsi, par exemple, alors que la langue est une chose qu'on emploie, le discours est le lieu de l'emploi que l'on fait de la langue. De plus, alors que la langue est le résultat d'une construction qui s'étale sur un espace de temps très long, le discours est un ouvrage dont le temps de construction est relativement très court. Qui plus est, au moment où le sujet parlant entre en activité de langage il a devant lui un discours à construire alors qu'il possède en lui une langue déjà construite. Dans un second temps, en m'appuyant sur les distinctions préalablement établies, j'examinerai comment ces différentes articulations prennent forme dans le jeu subtil des articles un et le en français, en montrant de quelle manière cette catégorie grammaticale représente une variation du concept qui n'est pas à confondre avec celle que les logiciens reconnaissent habituellement sous les termes de compréhension et extension du concept. Troisièmement, j'inviterai le lecteur à imaginer ce qu'il en aurait été du premier roman de Lipman – *La découverte d'Harry Stottlemeier* – si ce dernier avait connu la théorie linguistique de Gustave Guillaume concernant les articles. Cela aurait peut-être conduit Lipman à écrire une toute autre version de son roman philosophique. Imaginant ce que cela aurait pu donner pour quelques-uns des chapitres de ce roman, nous tenterons alors de nous mettre dans la peau du personnage principal – Harry – et de voir comment il aurait pu être conduit, aidé par ses pairs, à entrevoir que son entreprise de questionnement touchant la pensée propose, somme toute, un renversement complet dans le monde de l'éducation.

Mots clés : pensée, langage, linguistique, théorie de la pensée, formation de la pensée

Abstract

Psychomechanics of language and Philosophy For Children

In his last theoretical book published in 2003, *Thinking in Education*, Matthew Lipman stated that within the Philosophy for Children (P4C) program, we need a theory of thinking, because without it the work that awaits its practitioners and those who focus on the formation of thinking may have no recognized effects. To make progress in this direction, he thought it particularly appropriate to take into account research on performative sentences, since language is in a sense a mind map. In this article, I want to take a step further on the path Lipman paved by appealing to the field of linguistics known as the psychomechanics of language and to linguist Gustave Guillaume, who dedicated most of his research to understanding how thinking constructs language by constructing itself through language. First, I will outline the major points of Guillaume's theory of language, focusing on his important distinction between "tongue" (after "langue" as proposed by Saussure in 1916) and "discourse" (which, in the reconstruction of Saussure's theory, he substituted for the latter's "parole"), which oppose each other in many respects. For example, while tongue is something we use, discourse designates the space in which we use tongue. Further, while tongue is the result of a construction that spans a long period of time, discourse takes a relatively short amount of time to construct. Moreover, when a talking subject enters into language she has to construct discourse whereas she already possesses a constructed tongue. Thus tongue seems like something permanent within thought, while discourse has a superficial, discontinuous character that is alternately present and absent. In short, tongue has the character of something acquired and established deep in thought, in a sustainable and durable manner. In contrast, discourse is not established—it asserts freedom in the face of an instituted tongue. Second, I will examine how these distinctions take shape within the subtle game between the two French articles "un" and "le," demonstrating how these represent a variation of the concept rather than what logicians typically identify as the comprehension and extension of the concept. Third, I will invite readers to imagine how Lipman's first philosophical novel, *Harry Stottlemeier's Discovery*, might have been different had he known about Gustave Guillaume's linguistic theory concerning articles. By imagining how some of the book's key chapters may have differed, I will put myself in the shoes of its main character Harry and consider how he could have been driven, with the help of his peers, to envision the ways in which his questioning endeavour ultimately entailed a complete reversal in the world of education.

Keywords : thinking, language, linguistic, theory of thinking, training of thinking.

PSYCHOMECANIQUE DU LANGAGE ET PHILOSOPHIE POUR LES ENFANTS

Ce que je vois ce n'est jamais telle chose ou telle autre, c'est le lien entre les deux.
Christian Bobin, *La Merveille et l'obscur*

Introduction

Dans son dernier livre théorique paru en 2003, *Thinking in Education,* Matthew Lipman indiquait qu'en philosophie pour les enfants, nous avons besoin d'une théorie de la pensée en action, car sans elle le travail, qui attend ceux et celles qui pratiquent cette discipline et qui ont à cœur de mettre l'accent sur la formation de la pensée, risque d'être sans effet appréciable. «We need a theory of thinking because without it, our hard-won phrase « thinking about thinking » makes no sense. We need curricula that present mental phenomenon in a *unified* and developmental manner… » (Lipman, 2003, 140).

Pour faire un pas dans cette direction visant à comprendre les phénomènes mentaux, il semblait clair à ses yeux qu'il serait approprié de tenir compte des recherches philosophiques et linguistiques de J. L. Austin, J. Searle et Zeno Vendler qui se sont intéressés, notamment, aux locutions performatives et aux actes mentaux qui sont impliqués dans ces locutions. Car, ajoutait-il, le langage est, en un sens, une carte de la pensée. Du coup, celui qui souhaite former la pensée devrait porter une attention particulière au langage et à tout ce qu'il nous révèle de la pensée et de ses mouvements.

Dans cet article, je souhaite m'engager dans le chemin tracé par Lipman, mais en faisant appel cette fois au linguiste Gustave Guillaume – et la science linguistique dénommée psychomécanique du langage - qui a consacré l'essentiel de ses efforts, entre 1909 et 1960, à comprendre comment la pensée construit le langage en se construisant par le langage. Inspiré, notamment, par Leibniz, Bergson, Delacroix, Humboldt, Guillaume était convaincu qu'on ne saurait parler du langage sans faire appel à la pensée. L'un, le langage et plus précisément, nous le verrons, la langue, est le reflet d'opérations mentales fondamentales qui nous conduisent à la racine de l'activité de penser.

En fait, la science de Guillaume est une linguistique opératoire dont l'épistémologie, essentiellement génétique, nous renvoie constamment à la pensée qui se crée parce qu'elle a créé le langage qui nous renvoie à elle. Par là, je souhaite faire un pas de plus visant à combler, partiellement, les besoins que nous avons en philosophie pour les enfants lorsqu'il s'agit d'élaborer une théorie de la pensée qui soit en accord avec les visées d'une éducation préoccupée par la formation d'une pensée lucide, consciente d'elle même. L'activité de penser par et pour soi-même implique la conscience de soi en tant qu'être pensant soucieux d'améliorer les opérations qui en permettent l'existence.

Plusieurs raisons justifient le recours à la psychomécanique du langage lorsqu'il s'agit d'élaborer une théorie de la pensée en accord avec les visées de la philosophie pour les enfants telle qu'imaginée par Lipman.

Premièrement, tout comme Lipman, Guillaume n'a eu de cesse de répéter qu'une compréhension du langage et des liens qui l'unissent à la pensée ne saurait se produire avec succès si on s'en tient uniquement aux résultats qu'il est possible de produire avec cet outil.

Pour Guillaume, comprendre la genèse du mot et de la phrase est essentiel si l'on souhaite comprendre le sens qui se déploie en discours. Le résultat – telle ou telle signification – n'a de sens qu'au regard d'un processus, d'une opération qui en a permis l'existence.

De même, pour Lipman, le processus d'enquête est plus important que les résultats produits par ce processus. À ses yeux, être éduqué ne se mesure pas à la quantité d'informations emmagasinées, mais à la capacité réalisée, grâce à la pratique d'opérations, de penser par et pour soi-même.

Deuxièmement, les explications de Guillaume touchant le langage ne mettent jamais de côté le sujet parlant. Son lieu d'observation est l'être humain parlant, dans le temps présent, qui dit quelque chose. Pour Guillaume, le langage n'a d'autre lieu d'existence que ce moment. Pour Lipman, l'importance accordée au sujet qui se construit est tout aussi fondamentale. Le «je pense par et pour moi-même», but recherché en communauté de recherche philosophique, implique qu'un sujet se construit dans son rapport à l'univers.

Troisièmement, Guillaume n'a jamais exclu la question du sens dans sa recherche visant à comprendre la nature du langage humain. Toute explication en psychomécanique du langage se ramène à identifier comment une unité de signification à l'état de puissance peut générer une multiplicité de significations effectives (allant à des oppositions de sens parfois contradictoires). Or, la question du sens est centrale en philosophie pour les enfants, tant sous l'angle de la direction à donner à la vie que nous voulons avoir, qu'aux multiples significations qu'un mot peut avoir selon les usages. [1]

Enfin, selon Guillaume, une langue est, en soi, une théorie pragmatique qui permet de donner du sens à l'expérience.

Son pragmatisme est tel qu'il n'hésitait pas à endosser la définition de la vérité telle qu'énoncée par James dans son livre sur le pragmatisme.[2] Or, nous le savons de bien des façons, le programme de Lipman trouve ses racines dans le pragmatisme. Ce philosophe n'a jamais caché son sentiment favorable à l'égard du pragmatisme en général et de celui de John Dewey en particulier.

Je dirai d'abord quelques mots de la psychomécanique du langage en montrant comment le langage humain, selon cette discipline, s'articule sur le rapport qui existe entre la langue et le

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[1] On n'a qu'à penser au roman *Pixie* pour saisir jusqu'à quel point la signification joue un rôle important dans le programme de Lipman. Le guide pédagogique – *À la recherche du sens* – qui accompagne le roman *Pixie* regorge de plans de discussion qui invitent à examiner la multiplicité des significations, selon les contextes.

[2] «Dans la sixième leçon de son ouvrage consacré au " Pragmatisme", William James a donné de la vérité scientifique une définition qui m'a toujours enchanté. Il a écrit : " Les vérités, ce sont les idées qui paient. " On ne saurait, quand il s'agit de vérité scientifique, mieux dire. Une idée qui paie est celle qui fait mieux voir, mieux comprendre, qui suscite la découverte. Ceci indépendamment de sa qualité intrinsèque. Une idée qui paie peut fort bien en soi être une erreur qui apparaîtra plus tard, ou même qui est momentanément admise, afin de faire que l'idée paie. Il arrive que l'on sépare théoriquement des choses qui, dans la réalité, ne se séparent jamais complètement. On opère ainsi, en pensée, une séparation catégorique que la réalité refuse : or cette séparation catégorique est, en général, indispensable à l'étude et à la compréhension des séparations moins tranchées, hypothétiques, que la réalité comporte. On a donc, en un tel cas, accepté une séparation inexistante en fait, mais payante lorsqu'il s'agit de comprendre et d'expliquer les faits réels. Je suis demeuré intimement persuadé que, par exemple, la séparation catégorique et banale - c'est la plus banale qui est la plus catégorique - de l'espace et du temps n'est, dans l'esprit, pas autre chose qu'une idée qui paie, et qui paie merveilleusement, mieux qu'aucune autre. Et je garde la conviction intime qu'en l'absence de cette séparation catégorique, admirablement payante, aucune des vues profondes sur le temps et l'espace, dont on s'est servi pour faire voir l'erreur appartenant à la représentation banale, n'aurait pu être conçue. Mon opinion est donc que l'esprit humain, expérimentalement, cherche son départ - celui de son activité - en des idées sinon vraies, du moins payantes, les mieux payantes restant les plus vraies.» (Guillaume, 2008, p. 152)

discours. Guillaume s'est constamment appuyé sur cette distinction dans ses recherches. Puis, à partir d'un chapitre du premier roman écrit pour les enfants – *La découverte d'Harry Stottlemeier* – de M. Lipman, je montrerai que certaines analyses de G. Guillaume, s'y ajoutant, pourraient venir éclairer la voie de ceux et celles qui, faisant de la philosophie avec les enfants, désirent accéder à une théorie de la pensée qui leur fasse comprendre ce que l'expression «thinking about thinking» peut bien vouloir dire. Je montrerai finalement que le recours aux schémas explicatifs fournis par la psychomécanique du langage, notamment le tenseur binaire radical, pourrait nous conduire à illustrer autrement le renversement que propose la philosophie pour les enfants dans le monde de l'éducation.

Le langage humain selon Gustave Guillaume

Aux yeux de G. Guillaume, un savoir qui porte le nom de science, au sens plein de ce mot, doit au moins répondre aux deux conditions suivantes:
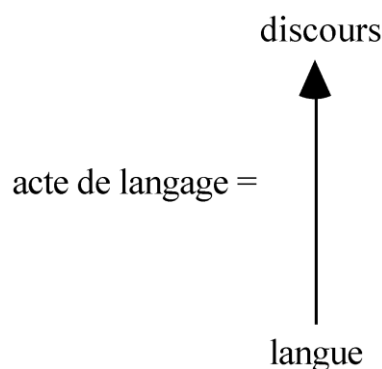
1- son objet doit, sous l'une ou l'autre de ses parties, se présenter comme un fait sensible directement observable.

2- le savoir doit tendre à l'observation de toutes les parties de l'objet puisque la compréhension et l'explication de celui-ci supposent la vision de la cohérence des diverses parties entre elles au sein du tout. Sans cette vue d'ensemble, il apparait difficile de prétendre à une réelle compréhension. C'est du moins, semble-t-il, ce qu'il avait en tête lorsqu'il écrivit ces lignes: «On explique selon qu'on a su comprendre. On comprend selon qu'on a su observer. Compréhension et explication sont, en toute science où elles sont recherchées, tributaires d'une observation qui devra pour susciter pleinement l'une et l'autre être fine et complète. Elle tiendra sa finesse de l'acuité de vision physique et mentale de l'observateur et sa complétude, du rigoureux souci qu'il aura de tenir sous son regard, sans en laisser échapper aucune partie, l'entier de l'objet en cause.» (Guillaume, 1964 - 2 ed. 1973, 272).

Par quel biais de lui-même le langage se présente-t-il comme fait de réalité sensible directement observable ? La réponse est relativement simple: au moment où un sujet parlant dit quelque chose. En dehors de cet acte de langage qui comprend un dit, il n'y a pas de langage observable directement. Ceci étant posé, examinons maintenant ce qui se passe au sein de cet acte et quelles sont les parties qui constituent ce tout qu'on appelle le langage humain.

Le langage humain dans l'instant présent

Puisque le langage se présente par un côté de lui-même directement accessible sous les traits d'un acte, il y a lieu de voir celui-ci comme un *mouvement*. Le point de départ de ce mouvement est une réalité que Guillaume nommait langue et son point d'arrivée une réalité qu'il nommait discours. (Guillaume, 1973b, 18) Ce qui pourrait être figuré de la façon suivante:

discours

acte de langage =

langue

C'est dire qu'au moment où l'être humain utilisera un langage, voulant ainsi signifier à quelqu'un ou à lui-même une certaine réalité dont il a l'expérience, il devra engager en lui-même un mouvement qui le portera (lui, le sujet parlant) de la langue au discours. Par leur position respective de commencement et de fin de l'acte de langage, la langue et le discours se distinguent et, à la limite, s'opposent sous plusieurs points de vue. Tout langage humain, pour autant où il ne se présente pas comme le résultat d'un acte improvisé, comporte nécessairement ces deux parties et l'ensemble des rapports que ces deux parties entretiennent entre elles. Or chacune d'elle présente des caractéristiques spécifiques. Dans le cadre de cet article, je vais m'attarder à cinq d'entre elles.

1- Une première différence que nous pouvons entrevoir entre la langue et le discours est celle qu'il faut faire entre une *chose qu'on emploie et l'emploi que l'on fait de cette chose.* Au titre de chose qu'on emploie, la langue constitue dans le sujet parlant la somme des possibilités qui lui sont offertes à tout moment en vue de représenter et d'exprimer ce dont il a momentanément l'expérience. Le discours, de son côté, réfère à l'emploi momentané de certaines des possibilités ainsi offertes par la langue. En d'autres termes, lorsque le sujet parlant entre en activité de langage il doit attendre de la langue «qu'elle lui donne la puissance et l'aisance d'expression et du discours» il ne doit pas attendre «autre chose qu'un usage habile des moyens de puissance et d'aisance ainsi mis à sa disposition.» (Guillaume, 1973a, 159)

2- Une seconde distinction utile à reconnaitre entre la langue et le discours réside dans le fait que la langue est le résultat d'une construction qui s'étale sur un espace de temps très long (ainsi, par exemple, la langue française est le résultat d'une construction dont l'origine se perd dans la nuit des temps) alors que le discours est un ouvrage dont le temps de construction est relativement très court. A ces temps de construction différents, il faut ajouter qu'au moment où le sujet parlant entre en activité de langage il a devant lui un discours *à construire* alors qu'il possède en lui une langue *déjà construite.* La langue apparaît donc comme quelque chose de profond et de permanent dans l'esprit, c'est-à-dire continuellement à la disposition du sujet parlant alors que le discours présente caractère superficiel et *discontinu* étant tour à tour présent et absent. En somme, la langue présente le caractère de quelque chose d'acquis et *d'institué* au fond de la pensée. Elle est établie d'une manière durable. Le discours présente plutôt le visage du *non institué*. De son côté s'affirme la liberté, contraire à l'institution. (Guillaume, 1973a, 112)

3- Un autre contraste important à considérer tient au fait qu'il existe une relation temporelle entre la langue et le discours. La langue est un *avant* dont *l'après* est le discours. Cette relation d'antériorité et de postériorité peut paraitre pour le moins paradoxale puisque l'emploi d'un instrument ne pourrait se faire sans la présence simultanée de cet instrument.[3] Cependant, elle trouve tout son sens lorsque l'on saisit que cette relation est sous-tendue par une relation tout aussi réelle qui est celle de *conditionnant* à *conditionné*. En effet, la langue se présente comme la condition d'existence du discours. Aucun discours ne serait possible sans la préexistence de la langue. Ce qui, chose tout à fait banale, revient à dire que l'emploi d'un instrument présuppose à tout le moins son existence. «On peut donc poser en principe que d'une manière générale la relation langue/discours est une relation permissive, selon laquelle des conditions de langue en nombre restreint permettent des conséquences de discours dont la diversité n'a d'autres bornes que le respect suffisant de la condition de départ - appartenant à la langue et une en langue, nonobstant les conséquences multiples et diverses qu'elle porte en discours.» (Guillaume, 1973b, 32)

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[3] Cette relation d'avant et d'après est bien discutée par Roch Valin dans le cahier de psychomécanique du langage qui porte le titre *La méthode comparative en linguistique historique et en psychomécanique du langage.* Cf., particulièrement à la page 56.

4- A cette relation de conditionnant/conditionné s'ajoute celle de puissance/effet. La langue est, aux dires de Guillaume, du *langage en puissance*, c'est-à-dire qu'elle contient virtuellement, par provision, le *langage effectif* qu'est le discours. Autrement dit, le discours n'est jamais autre chose qu'une des actualisations que permettent les possibilités incluses dans la langue. L'être humain qui parle provoque en lui «une transition de l'intégral au différentiel, du tout de puissance - donné en une fois à la pensée humaine - à la partie d'effet, produite dans le moment étroit du besoin et asservie à cette momentanéité. Cette relation du tout de puissance qu'est la langue à la partie d'effet de laquelle ne sort pas le discours est une relation sentie de tous.» (Guillaume 1973a, 160)

5- Passer du tout de puissance qu'est la langue à la partie d'effet qu'est le discours, faire un acte de langage, c'est aussi passer d'une étape préalable de *représentation* à une étape ultérieure *d'expression*. C'est un principe de l'enseignement de Guillaume «qu'on exprime à partir du représenté» (Guillaume, 1973a, p. 154). Pour bien comprendre ce nouveau contraste entre langue et discours nous pouvons, comme Guillaume, utiliser les termes *pensé* et *pensable*. L'expression est à mettre en relation avec le *pensé* car ce que le sujet parlant exprime n'est autre que ce qu'il a pensé. Le lieu de cette expression est le discours. «Dans le discours, on trouve le pensé en expression». (Guillaume, 1973a, 160) En ce qui concerne la représentation, il faut la mettre en relation avec le *pensable*, c'est- à-dire avec tout ce qui peut être pensé mais qui, pouvant être pensé, ne l'est pas encore. La langue est faite d'actes possibles de représentation; plus justement elle permet une représentation de tout ce qui peut être pensé. Cette représentation correspond à une division du pensable (à une «fragmentation» disait Guillaume) à partir de laquelle il sera possible, grâce aux résultats obtenus et par emprunt de ces résultats, d'exprimer ce qui est momentanément pensé. Autrement dit, au moment où un sujet parlant veut dire quelque chose à propos d'une réalité dont il a momentanément l'expérience, il doit transmuter la représentation qu'il aura su s'en faire (en faisant appel à sa langue) en une expression (dont le lieu d'existence est le discours) qui manifestera le plus clairement possible la réalité dont il a l'expérience.

Tout ce qui vient d'être présenté pourrait être figuré de la façon suivante :

Langue	**Acte de langage**	**Discours**
La chose qu'on emploie	⟶	L'emploi qu'on en fait
Institué	⟶	Non institué
Avant	⟶	Après
Conditionnant	⟶	Conditionné
Puissance	⟶	Effet
Représentation	⟶	Expression
Pensable	⟶	Pensé

Figure 2

Il y aurait encore beaucoup à dire concernant le langage selon le point de vue de la psychomécanique. Pour mieux en saisir les nombreuses implications, il serait intéressant de s'attarder quelque peu sur la notion grammaticale de l'article.

Aussi étonnant que cela puisse paraître à première vue, la catégorie grammaticale de l'article est riche d'enseignements pour qui cherche à comprendre comment la pensée humaine fonctionne. Pour un logicien, tout concept possède une compréhension (ce que le concept

retient en lui pour la définition de la chose dont il est le concept), laquelle ouvre un champ d'extension qui inclut le nombre total des choses singulières auquel la compréhension peut être appliquée (largeur maximale d'application du concept). Ces deux propriétés logiques sont liées entre elles selon un rapport inversement proportionnel en vertu duquel la compréhension d'un concept est d'autant plus grande que son extension est moindre, et vice-versa. Fait à noter : la variation de l'extension a son principe dans la comparaison des compréhensions des concepts entre eux, à condition que ces concepts soient liés selon un rapport de subordination comme celui qui existe, par exemple, entre un genre et une espèce. Ainsi, l'on dira que l'extension du concept girafe (espèce) est moindre que celle du concept animal (genre), laquelle est à son tour plus restreinte que celle du concept vivant (genre supérieur).

Mais comment comprendre, dans les exemples suivants où nous avons des phrases qui disent quelque chose de vrai:
      1- Une girafe est un mammifère.
      2- Une girafe traverse le zoo.
      3- La girafe traverse le zoo.
      4- La girafe est un mammifère.

que le même concept girafe puisse évoquer une valeur d'universel (1 et 4: le concept *girafe* est pris universellement) et de singulier (2 et 3: le concept *girafe* est pris singulièrement) sans que sa compréhension et son extension varie d'un seul degré? Dans les 4 phrases, le concept «girafe» a la même définition (compréhension) et, par conséquent, la même extension (champ possible d'application du concept). Comment peut-on expliquer cette seconde variation et comment faire le lien entre celle-ci et la première, celle dont le logicien se préoccupe habituellement? Autant de questions que le logicien, ayant aperçu le problème tel que nous venons de l'exposer, ne peut pas ne pas se poser et pour lesquelles il a le devoir de fournir une explication. Pour valable qu'elle soit, cette explication devra recourir à la linguistique et au savoir particulier que celle-ci professe concernant la catégorie du discours traditionnellement appelée substantif et son lien avec l'article.

C'est peut-être là une attitude que la plupart des logiciens se refuseront à cautionner prétextant que le problème en cause est linguistique ou psychologique mais certainement pas de nature logique et que tout problème de logique peut et doit se résoudre à l'intérieur et par la science logique. Pourtant, une chose semble claire: le problème que nous avons évoqué ne peut être valablement solutionné que si nous l'abordons selon l'oeil du grammairien. Car, ce qui varie de 1 à 4, c'est en réalité non pas le concept, mais la largeur momentanée d'application de celui-ci en discours. Parmi les diverses valeurs possibles du mot en langue, le sujet parlant est mis en demeure, au moment où il veut exprimer quelque chose, de ne choisir et de n'actualiser qu'une seule de ces valeurs. Il lui faut passer, aurait dit Guillaume, de l'état puissanciel – permanent – dans lequel se trouve le concept en langue à l'état effectif – momentané – qu'il aura en discours.

Cette explication repose elle aussi en partie sur la distinction, évoquée plus haut concernant la relation langue/discours, entre une chose qu'on emploie (le concept) et l'emploi qui est fait de cette chose (les différentes significations en discours).
Au titre de chose qu'on emploie, le concept est affecté d'une désignation momentanée que Guillaume appelait l'extensité du concept, laquelle peut prendre toutes les valeurs sauf celles qui dépasseraient sa puissance permanente de désignation. Si cela se produisait, on conçoit qu'ipso facto, la compréhension du concept en serait changée. Or, fait intéressant, Guillaume prend soin de préciser qu'il est demandé à l'article, ce petit mot métaphysique, à partir du moment où il s'institue comme catégorie grammaticale, de dénoncer, à l'aide de signes appropriés, ces possibilités de variation extensive. Cela ouvre un champ de réflexion en philosophie et en logique qui demande quelques approfondissements.

L'article *un* est le signe d'une opération mentale de particularisation allant d'une extensité maximale (universel) jusqu'à une position finale où l'extensité est minimale (singulier). L'article le, de son côté, est le signe d'une opération de généralisation que la pensée entreprend en elle-même ayant son départ inversement à la position de singulier et vient expirer en position d'universel. En figure:
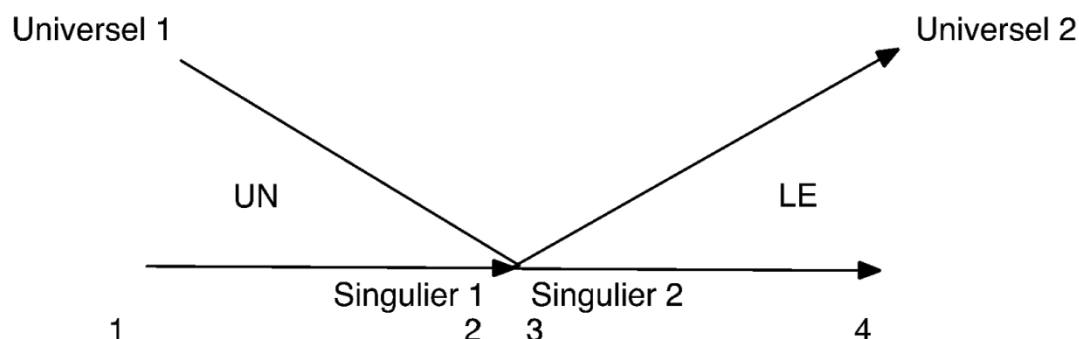

Figure 3

Les positions 1, 2, 3, 4 correspondent respectivement aux exemples que nous avons utilisés précédemment. Ainsi, dans la pensée, le concept *girafe* ne signifie ni le genre, ni l'espèce - comme dans: La girafe est un mammifère, ou Une girafe est un mammifère; ni la détermination étroite comme dans: La girafe traverse le zoo; ni la détermination strictement objective comme dans: Une girafe traverse le zoo. En pensée, en langue serait mieux dit, le concept *girafe* condense en lui par *provision* la virtualité de chacune de ces possibilités réalisées en discours. Il n'en n'exprime aucune en particulier. C'est au moment de produire un discours que le sujet parlant devra choisir laquelle de ces positions il entend exprimer.

Par cet exemple, on voit que la langue contient en puissance tous les usages que nous pourrons en faire en discours. Elle est bien, en ce sens, un avant conditionnant, dont les conséquences, visibles en discours, sont des après. Le mouvement de pensée que nous avons sous les yeux est, en fait, l'instrument représentation dont la pensée se sert afin d'exprimer en discours l'une ou l'autre des positions que permet cet outil de représentation. Dénommé *tenseur binaire radical* par Guillaume, il est présent sous tous les rapports qui s'instituent en langue (Guillaume, 2003, 77). L'espace me manque ici – cela demanderait un autre article – pour expliquer la nature de cette représentation en langue. Chose certaine, ainsi que le lecteur peut le constater, elle n'a rien à voir avec une copie du réel. Les représentations en langue sont des schèmes opératoires qui permettent au sujet parlant de transmuter son expérience de l'univers en une expression dicible.

Et si Matthew Lipman avait connu la théorie de Gustave Guillaume…

Ceci étant dit, pour ceux et celles qui ont lu le premier roman philosophique pour enfants écrit par M. Lipman, *La découverte d'Harry Stottlemeir*, vous vous souviendrez peut-être que dans le premier chapitre, le personnage central, Harry, est bien heureux d'avoir fait la découverte que les énonciations commençant par le mot «Tous» ne «se renversent pas» (si on prend le sujet et qu'on le met à la place du prédicat, tout en conservant le déterminant «Tous», la phrase devient fausse)[4] alors que celles débutant par le mot «Aucun» peuvent être renversées et demeurer vraies. Voulant partager sa joie, il en parle à l'un de ses amis, Tony, au début du second chapitre. Ce dernier réagit à sa découverte en disant : «Et alors? […] je n'en vois pas l'intérêt. Quelle utilité y a-t-il à savoir que tu peux retourner cette phrase-ci et non cette phrase-là ? Et ensuite, à bien y réfléchir, combien y a-t-il de phrases qui commencent par le mot « tout » ou par le mot « aucun » ? Très peu.» (Lipman, 1978, 15) Tony s'éloigna alors en

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[4] Par exemple : «Tous les chats sont des animaux.» En présupposant que cette phrase est vraie, une fois le renversement du sujet et du prédicat effectué, «Tous les animaux sont des chats.», elle devient fausse.

courant, comme pour montrer que la découverte de Harry, s'il en est une, ne présente guère d'intérêt. Harry, légèrement découragé par le peu d'utilité que pourrait représenter sa découverte, se met tout de même à examiner l'utilisation du langage d'un peu plus près pour découvrir finalement, avec l'aide de quelques-uns de ses amis (incluant Tony) et l'enseignant, que même si bien peu de phrases commencent par «Tous», plusieurs, semble-t-il, peuvent être traduites – standardisées– sous la forme «Tous les A sont B.».

L'un des exemples retenus par Lipman est la phrase commençant par les articles indéfinis et définis. C'est Tony qui fournit l'exemple avec l'article indéfini : «Qu'en est-il de l'article « un », demanda-t-il. Pourrais-je dire « Un enfant faisant partie de cette classe est à coup sûr un américain » ce qui équivaut à dire « Tous les enfants dans cette classe sont américains, n'est-ce pas ? » (Lipman, 1978, 17-18). Puis ce fût au tour de l'enseignant d'intervenir après que se soient écoulées quelques minutes sans nouvelles proposition : « Il me semble… que le problème ne vient pas d'un mot déterminé, mais de la façon dont la phrase est construite. Par exemple, supposons que le premier mot de la phrase soit le sujet de la phrase. Si je dis « les pommes frites sont salées » Ou si je dis « les Cadillac sont chères » je veux bien dire que *toutes* les pommes frites sont salées et que *toutes* les Cadillac sont chères ». (Lipman, 1978, 18) En d'autres termes, l'utilisation des articles indéfinis (un) et définis (le, les) peut être une façon de signifier la valeur universelle que recouvre le mot «tous». Si, au moment d'écrire son roman et le guide qui l'accompagne, Lipman avait connu la linguistique de Gustave Guillaume, il aurait peut-être pris soin, sous les traits d'un Harry, d'aller un peu plus loin dans l'examen de l'emploi des articles. Il aurait peut-être alors invité le lecteur à voir que les articles un et le peuvent signifier non seulement des valeurs universelles (comme dans les exemples retenus) mais aussi des valeurs singulières («Un élève entra dans la pièce.» « L'élève entra dans la pièce.») et, en fait, toutes les valeurs prises entre la quantité universelle et la quantité singulière. Cette polysémie des articles intrigua longuement G. Guillaume et sa détermination à en comprendre le mécanisme le conduisit finalement, comme nous l'avons montré plus haut, à voir sous les articles inscrits dans la langue française deux mouvements de la pensée, l'un partant de l'universel et se dirigeant vers le singulier (article *un*), l'autre partant du singulier en direction de l'universel (article *le*).

En s'inspirant de ce fait explicateur derrière les différents emplois des articles indéfinis et définis, Lipman aurait peut-être alors entrevu que sous les petits mots *un* et *le* se profile un mouvement de pensée fondamental : celui du passage d'un universel (U1) à un autre (U2), mouvement qui, se réalisant, rencontre un lieu d'inversion à deux visages, le singulier d'arrivée (S1) ou de départ (S2). À première vue, on pourrait penser que si Lipman avait connu Guillaume et qu'il avait pris soin d'introduire ces distinctions dans son roman ou son guide pédagogique qui l'accompagne, cela nous aurait conduit bien loin des considérations logiques (la standardisation des phrases énonciatives de quantité universelle) sur lesquelles travaillent les personnages dans le deuxième chapitre du roman. En fait, c'est peut-être dans le troisième chapitre de ce roman que les distinctions relatives aux articles auraient pu apparaître, c'est-à-dire au moment où Harry et ses amis s'interrogent sur ce qu'est la pensée.

En argumentant différemment les points de départ et d'arrivée du mouvement représenté par le tenseur binaire, les personnages du roman en seraient peut-être arrivés à proposer que, curieusement, ce petit schéma représente bon nombre d'activités de la pensée, prise dans ce qu'elle semble avoir de plus radicale. Ainsi, ils auraient peut-être découvert (ou inventé) que le tenseur binaire peut aussi représenter les mouvements de pensée suivants :
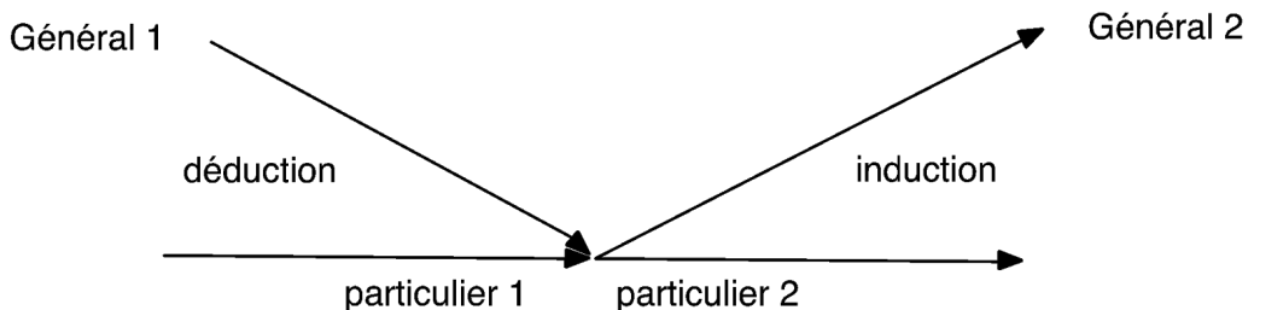
1- Déduction et induction

Figure 4
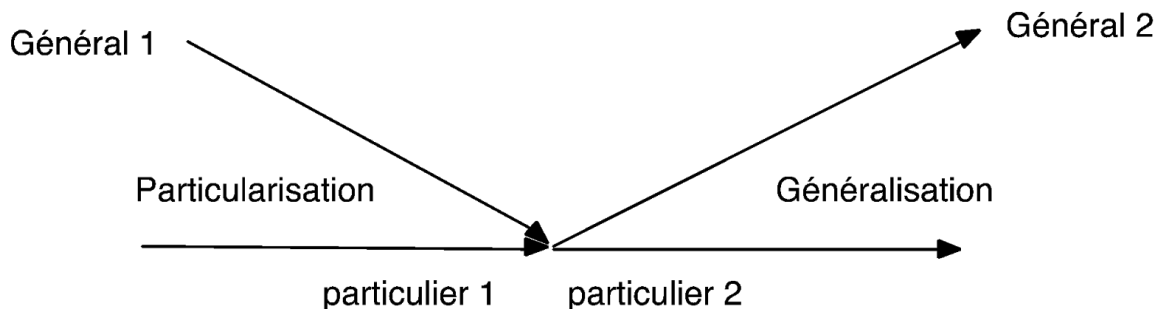
2- Particularisation et généralisation

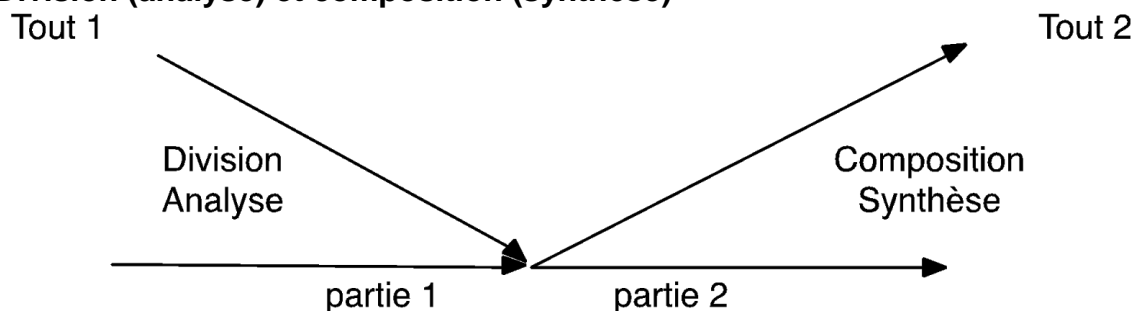**Figure 5**

3- Division (analyse) et composition (synthèse)

Figure 6

4- Concrétisation et abstraction

Abstrait 1

Abstrait 2

Concrétisation

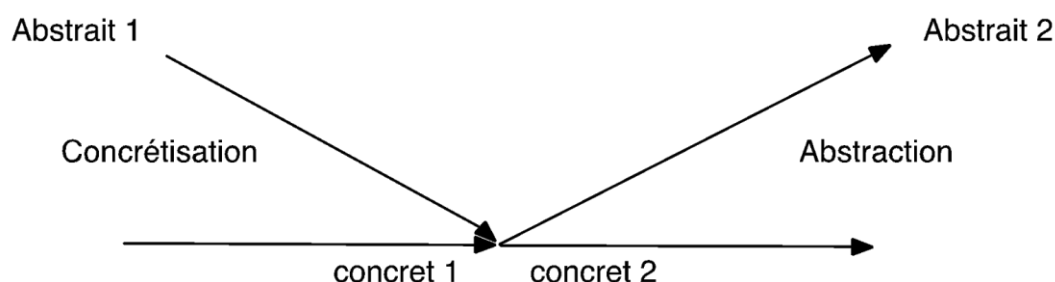Abstraction

concret 1   concret 2

Figure 7

Si tel avait le cas, alors peut-être qu'au chapitre 5 (chapitre qui porte sur la philosophie de l'éducation), l'un des personnages, revenant sur les réflexions produites dans le chapitre 3, aurait dit, d'entrée de jeu : «Et alors, quel en est l'intérêt? À quoi cela peut-il bien nous servir de comprendre qu'un même mouvement de la pensée, intérieurement contrasté, se présente inchangé sous des opérations dénommées différemment ?» Du coup, j'imagine assez bien Harry, légèrement découragé, se mettre à nouveau en mode de recherche afin de découvrir si leur découverte a quelque utilité.

Mais, peut-être aurait-il eu l'envie d'inviter à nouveau ses amis à pousser encore plus loin les possibilités d'application de ce schéma pour, notamment, explorer le contraste entre une éducation traditionnelle et celle, sans le savoir peut- être tout à fait consciemment, qu'il cherche à mettre en place par son questionnement sur la pensée, c'est à dire une éducation réflexive. Peut-être alors aurait-il pris alors le temps de dessiner le schéma suivant :

Question 1

Question 2

De l'enseignant vers les élèves

Communauté de recherche

pratiques traditionnelles en éducation

pratiques critiques en éducation

Réponse 1   Réponse 2

Figure 8

Peut-être aurait-il pu alors tenter d'expliquer à ses amis que dans l'école traditionnelle, nous partons habituellement des questions de l'enseignant et nous nous dirigeons vers les réponses des élèves (attendues par l'enseignant) alors que dans une éducation réflexive qui utilise la communauté de recherche comme cadre pédagogique, le point de départ est ce que les enfants savent afin qu'ils puissent de plus en plus poser leurs propres questions au seins d'une recherche en commun. Il aurait peut-être eu l'occasion de leur faire voir à quel point ce qu'il propose est un renversement radical quant à une éducation traditionnelle. Et qui sait, cette hypothèse aurait peut-être conduit l'un de ses amis à ajouter le schéma suivant :

Curriculum 1　　　　　　　　　　　　　　　　　Curriculum 2

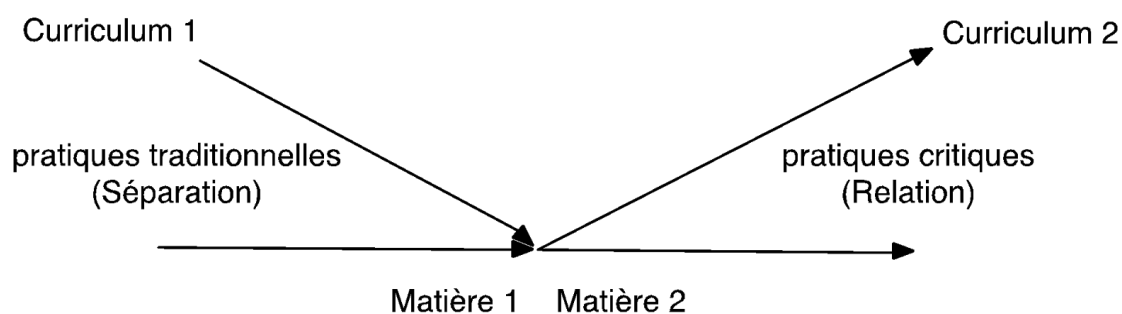pratiques traditionnelles　　　　　　　　　pratiques critiques
(Séparation)　　　　　　　　　　　　　　　(Relation)

Matière 1　　Matière 2

Figure 9

voulant alors signifier que dans le monde scolaire traditionnel, le curriculum présente les matières de façon séparée alors que dans une éducation de type réflexive, les matières sont mises en relation pour former un curriculum unifié bien différent de celui qui précède. Mais alors, peut-être qu'un autre enfant, lui aussi inspiré par cet instrument (ce mécanisme) de pensée qu'est le tenseur binaire, aurait proposé ceci :
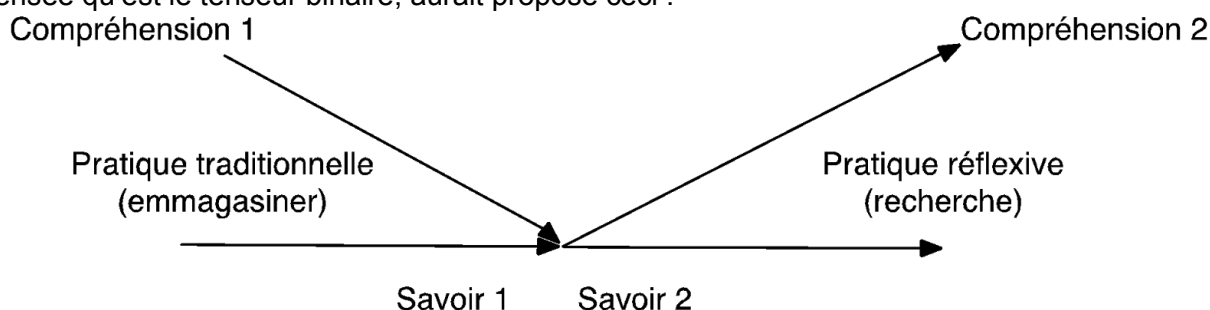
Compréhension 1　　　　　　　　　　　　　　Compréhension 2

Pratique traditionnelle　　　　　　　　　　Pratique réflexive
(emmagasiner)　　　　　　　　　　　　　　(recherche)

Savoir 1　　　Savoir 2

Figure 10

voulant alors faire voir que dans le monde de l'éducation traditionnelle, il s'agit de partir de ce que l'enseignant comprend afin que les enfants emmagasinent le plus de savoirs possibles, alors que dans une approche de nature réflexive, inversement, il s'agit de partir de ce que les enfants croient ou pensent savoir pour aboutir à une compréhension, la leur, de plus en plus grande. Ce qui aurait alors peut-être conduit Harry à ajouter finalement ceci :
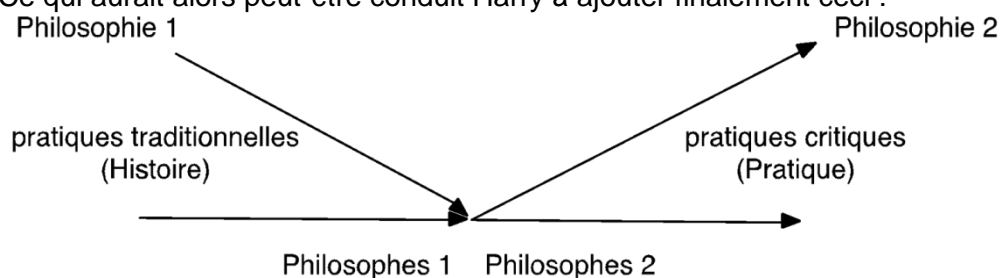
Philosophie 1　　　　　　　　　　　　　　　Philosophie 2

pratiques traditionnelles　　　　　　　　　pratiques critiques
(Histoire)　　　　　　　　　　　　　　　　(Pratique)

Philosophes 1　　Philosophes 2

Figure 11

suggérant alors que dans une éducation traditionnelle, quand on enseigne la philosophie, en fait il s'agit de l'histoire de la philosophie étudiée chez chacun des philosophes ayant contribué à la construction de cette histoire, alors que dans le monde de la philosophie pour les enfants, il s'agit plutôt de partir de ces philosophes (présentés sous les traits de tel ou tel personnage dans les histoires) et de permettre alors aux enfants de la classe, par la pratique, de faire de la philosophie.

La venue de Lisa, souvent critique de ce que pense Harry (voir notamment le dernier chapitre du roman), aurait peut-être alors été l'occasion de lire la chose suivante : «Mais avec un tel schéma, il semble qu'on peut tellement expliquer un tas de choses. Finalement, cela ne veut plus dire grand chose.» Du coup, l'enseignant, monsieur Spencer, toujours attentif à ce que ses élèves disent, pensent par et pour eux-mêmes, aurait peut-être ajouté, du fond de la

classe : «Je suis d'accord avec toi Lisa. Quand on explique tout, on n'explique plus rien. Toutefois, cela ne me semble pas être le cas avec ces figures. Je doute qu'elles puissent expliquer les rêves, même si, comme cela est le cas avec les articles, elles semblent référer à quelque chose dont nous n'avons nullement conscience. Qui plus est, avez-vous remarqué que tous les schémas qui sont au tableau contiennent certaines régularités ? Par exemple : il s'agit toujours d'un mouvement qui est parcouru en entier (de l'universel à l'universel en passant par le singulier, du général au général en passant par le particulier, etc.), comme si le rapport que vous avez dessiné, pour satisfaire à la condition d'entier, doit être parcouru dans les deux sens (principe d'intégrité). Bien plus, j'y vois un double mouvement qui n'est pas un aller-retour, comme si à chaque fois, s'interdisant tout retour à ce qui est déjà accompli, vous étiez en train de figurer ce qui se passe dans le temps qui, en fait, ne se laisse pas remonter (loi de non-récurrence). Enfin, je vois autre chose : le point d'arrivée, même s'il porte le même nom que le point de départ, ne semble pas pas tout à fait identique (loi de dissimilitude des isomorphes terminaux).» Il aurait peut-être terminé son observation en ajoutant: «Je ne sais pas ce que vous en pensez, mais je pense que cela vaut la peine d'aller encore plus loin avec ce que vous semblez avoir découvert en tentant de respecter ce qui m'apparait être des règles, des lois inhérentes à vos figures. Sans quoi, elles pourraient avoir le défaut, comme le souligne Lisa, de tout expliquer !»

Et j'imagine assez bien Harry, enchanté par les propos de monsieur Spencer, sortir de la classe en ayant l'esprit léger, tout en étant attentif à ce qu'ils venaient peut-être de découvrir et déterminé à pouvoir encore mieux comprendre comment la forme de ce petit schéma, né d'un effort pour saisir comment fonctionnent les articles, peut représenter quelque chose d'unique, quelque chose qui lui donnerait peut-être la possibilité d'aller un peu plus loin dans l'élaboration d'une théorie de la pensée qui tiendrait compte des mouvements et formes de mouvement qui l'anime.

Conclusion

Les recherches menées par Gustave Guillaume concernant le langage humain l'ont conduit à affirmer que toutes les langues sont le fruit d'une articulation diversifiée d'un mouvement général de la pensée : le double passage de l'universel au singulier, qu'il a maintes fois représenté par le tenseur binaire radical. Quand on observe la pensée humaine en action dans une communauté de recherche, on a tôt fait de reconnaître, sous bon nombre des mouvements qui la caractérisent (déduction, induction, formulation d'un exemple, élaboration d'une hypothèse, dégagement d'un présupposé, etc.), la présence de ce mouvement général présent dans toutes les langues : le passage du large (du plus) à l'étroit (au moins) et de l'étroit (du moins) au large (au plus). Dans le cadre de mes recherches, j'en viens à penser que plusieurs habiletés de penser dont on fait usage dans une communauté de recherche nous reconduisent à ce mouvement fondamental de la pensée. Mais il y a encore beaucoup de travail à accomplir pour montrer clairement ce qu'il en est. Au résultat, si mon hypothèse tient la route, nous aurons en main un instrument permettant de construire une théorie de la pensée en action dans une communauté de recherche, théorie qui permettrait de réunir et expliquer différents actes de la pensée sous un même mouvement différemment argumenté. Qui plus est, nous serons peut-être alors mieux placés pour inviter les enfants à organiser leur pensée, en attirant leur attention sur les grandes structures qui gouvernent leur pensée lorsqu'ils utilisent leur langue maternelle.

Matthew Lipman ne connaissait pas Gustave Guillaume. Et même s'il l'avait connu, il n'est pas dit qu'il aurait modifié son premier roman. Ce que nous savons, cependant, c'est qu'à l'instar de Guillaume, Lipman était préoccupé par les relations qui existent entre le langage et la pensée. Il allait même jusqu'à suggérer que toutes les disciplines devraient être enseignées comme des langages (Lipman, 1998, 18), y compris, va sans dire, la philosophie. Du coup, il serait intéressant de ramener la pratique de cette discipline aux rapports qui se dessinent entre la langue et le discours (cf. figure 2 dans le présent article). En lieu et place de la langue,

on pourrait avancer, en première approximation, les (certaines) habiletés de penser pratiquées dans une communauté de recherche. Le discours, de son côté, devrait être analysé sous l'angle du dialogue qui se construit dans une communauté de recherche. Chaque intervention, du moins celles qui sont le fruit d'une institution des pratiques de la philosophie en communauté de recherche, pourrait du coup être comprise comme un acte de recherche permettant le passage de l'habileté de penser à son usage dans le dialogue. Reprenant les principaux éléments de la figure 2, on pourrait ainsi voir les choses de la façon suivante :

Habiletés pour penser	Acte de recherche	Dialogue
Langue	**Acte de langage**	**Discours**
La chose qu'on emploie	⟶	L'emploi qu'on en fait
Institué	⟶	Non institué
Avant	⟶	Après
Conditionnant	⟶	Conditionné
Puissance	⟶	Effet
Représentation	⟶	Expression
Pensable	⟶	Pensé

Figure 12

Dans un prochain article, je souhaite détailler chacun de ces aspects afin de montrer comment la pratique de la philosophie en communauté de recherche pourrait être considérée comme la pratique d'un langage et comment des habiletés pour penser (définir, formuler des hypothèses, dégager des présupposés, etc.) sont analogues à la partie formelle (les structures grammaticales) des langues indoeuropéennes. En développant cette hypothèse, nous pourrions aussi entrevoir comment le langage de la communauté de recherche – *alias* les habiletés de pensée – ne nous apprend rien de déterminé sur le monde. Comme tout langage, sa construction répond essentiellement à une exigence de lucidité vis-à-vis du réel. Montaigne aurait dit : vaut mieux une tête bien faite qu'une tête bien pleine.

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"The Gendered Spheres of Silence and Voice in Eighteenth-Century Pedagogical Literature"

First presented at the International Congress for Eighteenth-Century Studies, Graz, Austria, July 2011

Karen L. Taylor

In her feminist treatise *The Second Sex* (1949)*,* the French existentialist philosopher Simone de Beauvoir wrote the famous words "one is not born but *becomes* a woman." Although she lived two centuries earlier, Louise d'Épinay's life (1726-1783) offers one of the clearest examples of what de Beauvoir meant. Madame d'Épinay's writings represent a woman in the process of defining herself – as an individual, an author, a parent and a teacher. In her *Conversations d'Émilie* (1774), a pedagogical work in the form of conversations between Émilie and her mother, the author uses dialogue as the means of teaching Émilie to exercise her faculties of reason and judgment. In doing so, she not only conveys basic principles of Enlightenment thought but also gives "voice" to herself and her child.

Madame d'Épinay's autobiographical, epistolary novel, *L'Histoire de Madame de Montbrillant* (1951),[1] similarly reveals the dynamics of silence and voice in a woman's life. Madame d'Épinay/Montbrillant expresses her voice with ease in letters to friends and family. But this work also reveals places of silence, social circumstances that deny Madame de Montbrillant freedom of expression. Her voice is silenced, too, by that of her tutor, whose commentary regularly interrupts the sequence of letters. As a male, as tutor, as "editor" of the letters, in some respects he stands above the correspondence that makes up most of the text. Madame de Montbrillant continuously seeks his guidance and approval. And yet, his voice is also hers… or rather Madame d'Épinay's.

Madame d'Épinay's writings offer the reader the voice of a woman in the process of constructing her identity despite the constraints placed on her by her family and her position as a woman in a highly patriarchal world. As Alice Parker has argued, "in choosing to reconstruct her life as fiction, Louise

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[1] An altered version of this work was published in 1818. The 1951 edition (Paris: Gallimard) was the first restored, accurate publication.

d'Épinay was able to distance herself from what she saw as the psychological and political victimization of women."[2] At the same time, she tells us about the dynamics of family life and a woman's role in it. Not only did Madame d'Épinay grow up in a patriarchal society but one that was also hierarchically ordered. While she came from a provincial noble family, noble status was in some respects precarious. If one did not have money or connections, one's future was uncertain. This was certainly the case for Madame d'Épinay.

Born Louise Florence Petronille Tardieu d'Escavelles, Madame d'Épinay lost her father when she was just nine years old. Left with little money or property, Louise's mother immediately set out to try and restore at least a portion of the family's fortune, entrusting her daughter to the care of her wealthy sister. Louise's childhood experience was fraught with humiliation and frustration with the treatment to which her aunt and cousin subjected her. At one particularly painful moment her aunt says: "I believe… that without me you would never have worn such a beautiful dress; before giving thanks, think about everything that I have done for you, and see what you would become without me. Despite your father's nobility, he was nothing but a beggar; do not be proud and haughty like him if you wish to maintain my good will."[3] Perhaps worse, Louise's conservative and devout mother emphasized what Parker has called the notion that "self-fulfillment is consonant with self-sacrifice," resulting in "a behavioral model resembling self-extinction."[4] Her mother lived in fear of blame and transmitted this anxiety to her daughter.[5]

When her family finally overcame their reluctance and allowed Louise to marry her eldest cousin, Denis Joseph de la Live d'Épinay, in 1745, it looked as though she had finally found happiness. But the tenderness of her husband quickly wore off and he resumed a life of dissipation of every kind, eventually infecting her with a serious case of venereal disease. Nearly everywhere she turned, Louise met with frustration. If she spent time in society or at the theater, she met with her mother's disapproval. When she wished to nurse her own child rather than send him out to a wet nurse, her husband refused. When she wanted to educate her son at home, the family insisted on sending him away to school.[6] Family, it seems, placed as many constraints on a woman's desires and actions as a society in which members of the elite were, furthermore, endlessly scrutinized and commented on by their peers. It looks as though Louise d'Épinay's life only confirms the argument so eloquently stated by John Stuart Mill in the next century on the subjection of women.

In *Women's Ways of Knowing,* the authors explore five separate epistemological categories: Silence, Received Knowledge, Subjective Knowledge, Procedural Knowledge and Constructed Knowledge.[7] They further explore the transitions from one category to the next. At the stage of Silence, women experience "an extreme in denial of self and in dependence on external authority for direction."[8] It is only through experience, often "after some crisis of trust in male authority in their daily lives, coupled with some confirmatory experience that they, too, could know something for sure."[9] When such a realization took place, women moved from the position of silence to one of subjective knowing. For d'Épinay, the combined experience of being thwarted in her desire to make independent decisions in regard to her children and having been subjected to cruel treatment by her husband seems to have made this transition possible. It is through her role as mother that d'Épinay developed confidence in her own subjective knowledge, opening

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[2] Alice Parker, "Louise d'Épinay's Account of Female Epistemology and Sexual Politics." *The French Review.* Vol. 55, No. 1 (October 1981): 44.

[3] "*Je crois, ma nièce… que sans moi vous n'auriez jamais porté une si belle robe ; avant de remercier, pensez à tout ce que je fais pour vous, et voyez ce que vous deviendrez sans moi. Malgré la noblesse de votre père, il n'était qu'un gueux ; ne soyez pas fière et haute comme lui, si vous voulez conserver mes bontés. »* Madame d'Épinay. *Les Contre-Confessions. Histoire de Madame de Montbrillant.* Paris: Mercure de France, 1989. 13. All translations are my own.

[4] Parker, 45.

[5] D'Épinay, *Les Contre-Confessions,* 40.

[6] For her assessment of Madame d'Épinay's experience, see Sissela Bok, "The Contested Self-Portrait of Madame d'Épinay." *Ploughshares.* Vol. 10, No. 2/3 (1984) 173.

[7] Belenky, Mary Field, et al. *Women's Ways of Knowing: The Development of Self, Voice and Mind.* NY: Basic Books, 1986; 1997. 15.

[8] Ibid., 24.

[9] Ibid., 58.

the way to further epistemological growth. It is through her role as a writer and educator that Louise d'Épinay found her voice.

A number of scholars have commented on the significance of letter writing for women in the eighteenth century. Writing is an act through which one defines the self and one's relationship to the outside world. It necessitates reflection and thereby promotes meta-cognitive or higher order critical thinking. Writing letters was the way in which women communicated with husbands away from home, family members, and friends. Moreover, letters in the eighteenth-century were viewed differently than they are today. Rather than serving as a private means of communication, letters were often highly public matters, read aloud and shared with others, thus bridging the divide between public and private space.[10] Despite her husband's waywardness and prodigality, Madame d'Épinay wrote letters urging him to alter his behavior and offering advice, or to his superiors and other influential persons attempting to intervene on his behalf. Like many of the women of her age, she wrote letters to her mother, her tutor, to her children and in regard to their education, to her friends and lovers. The subject that occupied her most was the raising of her children. By the time she had fully embraced her career as a writer of pedagogical works, d'Épinay had clearly entered the final epistemological category of "constructed knowledge" whereby, "knowing is not simply an 'objective' procedure but a way of weaving… passions and intellectual life into some recognizable whole."[11]

Madame d'Épinay is perhaps best known for her connection to many of the great Enlightenment philosophers of her day. Her relationship with Grimm and the much publicized end to her friendship with Rousseau have probably unfairly called her character and abilities into question but she shared with the latter, in particular, a passion for pedagogy.[12] Her first attempt at pedagogical writing was her *Lettres à mon fils* (*Letters to My Son*, 1758). In these letters she discusses a variety of subjects, most of which were intended for her son's moral edification. The tone and style, however, are little suited for a child and she earned the constructive criticism of Rousseau on precisely this point.

Pedagogical theorists and developmental psychologists have long noted the efficacy of "scaffolding"[13] in contrast to the "verbal-didactic" mode of instruction.[14] It is the latter pedagogical approach that d'Épinay engaged in the letters to her son, Louis-Joseph, published in Grimm's *Correspondance Littéraire* in 1756 and 1757.[15] Louis-Joseph was by all accounts a "non-compliant" child, running into debt and imprisonment on more than one occasion. Studies show that parents of non-compliant children are less likely to give those children agency in problem solving or other activities.[16] Nonetheless, Madame d'Épinay's fundamental pedagogical concerns for her son and daughter/granddaughter were the same. She sought to inculcate into each an ethical system based on certain values that transcend gender, an emphasis on the development of reason and conscience whose deliberate exercise would lead to right action for "it is the witness of our conscience, based on virtue and truth, that should decide the merit and rule of our conduct."[17] The inefficacy of the straight-forward and rather stern approach adopted by d'Épinay in *Lettres à mon fils* seems to have been born out in her son's subsequent behavior, a source of pain and frustration for d'Épinay throughout her life.

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[10] For a thorough discussion of the significance of letter writing for women in the eighteenth century, see Dena Goodman. *Becoming a Woman in the Age of Letters.* Ithaca and London: Cornell University Press, 2009.
[11] Belenky et al., p. 141.
[12] See Rosena Davison, introduction to *Conversations d'Émilie* by Madame d'Épinay. Oxford: The Voltaire Foundation, 1996. 10-15.

[13] "When an adult in the course of solving a problem with a child assumes responsibility for arranging and managing the activity so that the child can participate at a level *just beyond* his or her current capabilities." Gauvain, Mary. *The Social Context of Cognitive Development.* NY; London: The Guilford Press, 2001.
[14] Ibid., 148.
[15] Madame d'Épinay, *Lettres à mon fils, essais surs l'éducation et morceaux choisis, correspondence et extraits.* Introduction by Ruth Plaut Weinreb. Concord, MA : Wayside Publishing, 1989. 17.
[16] Gauvain, 148; 168-169.
[17] «*C'est le témoignage de notre conscience, fondé sur la verité et la vertu, qui doit décider du mérite et de la règle de notre conduite.* » *Lettres à mon fils*, p. 72.

By the time she wrote her *Conversations d'Émilie,* however, d' Épinay had found the right tone and earned the praise of Grimm, Galiani, Voltaire, and Catherine II of Russia, among others.[18] The first edition was published in 1774 and consisted of twelve conversations based on her experience raising her granddaughter, Émilie de Belsunce. The second edition was revised and expanded and appeared in 1781, earning a prize from the prestigious Académie française in 1783. One contemporary review of the work expressed surprise at the author's talent that "at first glance does not seem to belong to her sex, it is that of defining words and things with an accuracy and a precision that few philosophers have possessed."[19]

In the preface to the *Conversations,* Madame d'Épinay states that her purpose is to use Émilie's interest in conversation to "form her intellect and accustom her to reflection without discomfort and without effort." [20] Certainly the mother plays a guiding role but she does not dominate. In fact, almost all the conversations are initiated by Émilie. The method Madame d'Épinay adopts is that of the Socratic dialogue, whereby conversation leads to knowledge.

The means employed by d'Épinay also reflect pedagogical and social mechanisms recognized by developmental psychologists as instrumental in the cognitive development of the child, five of which have been identified by Gauvain: "1) Both the adult and the child are engaged in activities that require thinking on both their parts; 2) Both adult and child assume responsibility for the activity; 3) Adults help the child by dividing the task into sub-goals and supporting the child's participation in these smaller, more manageable units of the problem; 4) Adult-child transactions change as children develop and become capable of managing more aspects of the problem on their own and 5) Adults assist children in the use of rudimentary strategies." [21] The "problem" for d'Épinay is the development of reason and a conscience. The "activity" or "task" is conversation. The goal is for the child to gain independence and agency.

If we are to accept that cognitive development leads to self-definition, then once a relatively mature sense of self has begun to emerge it is possible to give voice to that self, aided by four mechanisms that are simultaneously social and individual in nature: social experience (whereby "agents of cognitive socialization" (read adults) "provide the core activities through which children are exposed to and learn about thinking"),[22] legitimate peripheral participation ("children watch how more mature community members solve the problems of everyday life")[23], guided participation ("children learn and practice new skills with the assistance of more experienced others") [24] and the development of autobiographical memory ("narratives that convey something about the process of development… from the person's own perspective").[25] Furthermore, according to Gauvain, "the child is not merely a learner, that is a naive actor who follows the more experienced partner. Rather, the child is a full participant."[26]

Over the course of the *Conversations* and with assistance from her mother*,* Émilie moves gradually from defining words to more complex and abstract ideas. Her opinion is valued and her ability to reason and judge affirmed, in stark contrast to Madame d'Épinay's experience in her own childhood. In one of the earlier conversations, for example, Émilie asks her mother what a river is. The ensuing dialogue results in an exchange whereby Émilie recognizes and understands that a river is water but not the same as the water that is in the carafe. [27]The mother carefully and judiciously leads Émilie from definitions to higher order reasoning.

In the second volume, Émilie recalls a conversation she overheard among adults and it is clear from this and other occasions that Émilie listens to adult conversations and reflects on what she has heard. The

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[18] Davison, 4-6.
[19] Davison, 7.
[20] « *… pour lui former l'esprit et l'accoutumer à la réflexion sans gêne et sans éfort. »* d'Épinay, *Conversations d'Émilie.* Tome premier. Paris: Belin, 1788. XI
[21] Gauvain, 142-143.
[22] Gauvain, 54.
[23] Ibid., 16.
[24] Ibid., 13.
[25] Ibid., 10.
[26] Ibid., 37-38.
[27] *Conversations,* Tome I. 139-140.

mother later chastises Émilie for the language she, in turn, overheard the child using when playing with her doll saying, "I will not hide from you that your discourse with Madame (the doll) alarmed me. I saw you 'infuriated,' 'in despair;' I saw Madame on her side 'frightful', 'dreadful' and all that over a bonnet. You sense undoubtedly the strength of these terms." [28]Such are the words that Émilie heard adults using and has, naturally, tried to adopt for herself. Her mother goes on to say that such conversations set a bad example and follows by elaborating on the literal meaning of words, explaining that one should not exaggerate, despite the fact that it is common to *mondaine* conversation. Émilie comes to realize that she has spoken foolishly. Her mother then goes on to offer advice as to how Émilie might have expressed herself better to her doll.

Sometime later Émilie has not only come to deeper understanding of complex and abstract ideas, but has also taken on the role of "the mother" in the exchanges with her doll by offering instruction through conversation to the point where she explores epistemological questions clearly associated with Enlightenment thought. Where does knowledge come from? From the senses. In this exchange, Émilie is the voice of the "governess" speaking to the doll: "You see then that memory or the faculty to retain the impressions that one has received is like a sixth sense, without which the other five would not be of much use."[29] Émilie and her doll then go on to explore the difference between being deaf and mute (again evoking subjects of Enlightenment thought, particularly in the works of Diderot). Her mother marvels at Émilie, who is both the teacher and the student at the same time.[30] D'Épinay has succeeded in nurturing Émilie to the point where she has both accepted the values and lessons taught to her by her mother and begun to use them in developing her own voice.

In the first volume, Émilie and her mother discuss how one should evaluate a book. Even a child should be capable of doing so, according to Madame d'Épinay, but at this point Émilie does not yet trust her own judgment. However, her mother encourages her and eventually Émilie is able to state her opinion: "my reflections tell me that I do not agree with my book." [31] By the end of the second volume, Émilie undertakes to assess the first ten years of her life, in essence an autobiographical memory that "defines an individual's own history… and key features of the self."[32] In sum, Madame d'Épinay's *Conversations d'Émilie* promote a form of education that gives the child a remarkable degree of agency even at an early age. Ultimately, the purpose is to provide the child with the tools necessary for self-fulfilment such as d'Épinay had forged for herself. "*When you take care to cultivate your reason, to adorn it with useful and sound knowledge, you open so many new sources of pleasure and of satisfaction; you prepare so many means to embellish your life, so many resources against boredom, so many consolations in adversity… this is wealth that no one can take away from you, that will free you from dependence on others…*" [33]

For Madame d'Épinay, the maternal role is central to a child's education. In this she echoed the sentiments of many of her contemporaries. Where she differed was in her emphasis on education as a means of liberation, especially for a female child. This liberation would be the result of a healthy transition from one stage of cognitive development to the next, guided by an adult, and resulting in the full development of reason and judgment.

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[28] "*Je ne vous cache pas que votre discours à Madame m'a alarmée. Je vous ai vu outrée, au désespoir ; j'ai vu Madame de son côté éfroyable, épouvantable et tout cela pour un bonnet. Vous sentez sans doute toute la force de ces termes. » Conversations,* Tome II. 165.

[29] Ibid., 297.

[30] « *Je ne me doutais pas qu'un exercice de poupée fut une chose si laborieuse. Faire la maîtresse et et l'écolière à la fois! » Conversations,* Tome II, p. 303.

[31] "*Eh bien, mes réflexions me dissent que je ne suis pas d'accord de l'avis de mon livre." Conversations*, Tome I. 165.

[32] Gauvain, 10.

[33] "*Lorsque vous portez vos soins à cultiver votre raison, à l'orner de connaissances utiles et solides, vous vous ouvrez autant de sources nouvelles de plaisir et de satisfaction ; vous vous préparez autant de moyens d'embélir votre vie, autant de ressources contre l'ennui, autant de consolations dans l'adversité… ce sont des biens que personne ne peut vous enlever, qui vous affranchissent de la dépendance des autres… » Conversations,* Tome I. 527-528.

Western Civilization has been marked from its beginnings by binary opposites such as dark/light, male/female, public/private, written/spoken. Speech and writing are the tools one uses to define the self, a process that occurs in both private and public space. Because the latter have been traditionally associated with gendered spheres and the principle binary opposites of male and female, this study necessarily raises questions about the nature of power and authority. "Power gives voice," but this may also mean "power over oneself, in the sense of empowerment." [34]In the case of Madame d'Épinay, this empowerment is for herself but also for the next generation of women.

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Learning Through the Ear

Magdalena Brozio, Marzena Mularzuk and Joanna Ratyńska

The Tomatis Method is a non-invasive listening therapy which is aimed at correcting auditory attention and auditory lateralization disorders. Due to the versatility of applications, it can be a very useful measure supporting the work of a speech therapist, psychologist, guidance counsellor and even a doctor.

From the therapist's point of view, its enormous advantage lies in the fact that at least in the initial stages of the therapy, no active cooperation with the child is required. Children can be difficult patients who do not want to or cannot cooperate with the specialist. This mostly applies to autistic children, children suffering from ADHD and developmental retardation, who respond positively to auditory training and, despite expected difficulties, tolerate it well. The therapy can help to open such a child to further cooperation with the therapist.

The Tomatis method should not be confused with music therapy. The sound which is listened to here can be changed in such a way that it is difficult to recognize. The aim of such a treatment involves auditory system training and somehow forcing it to an increased effort, depending on which particular auditory abilities are practised.

Parents sometimes ask if it would not be enough to listen to Mozart's music at home. It needs to be emphasized again that the electronic ear is of fundamental importance in the Tomatis Method, which processes the sound in a way that it has therapeutic effect and exercises the auditory system. The administration of sound using both the air and bone conduction is a unique element of this therapy. It allows for exercising external attention, i.e. the ability to listen to other people and internal attention, i.e. controlling one's own utterances.

With time, the patient's active cooperation becomes necessary as the patient learns how to use the properly formed auditory attention to perceive one's own and other people's speech. This is another unique element of this method.

Tomatis' listening training can be used for both children and adults. This method does not only support people with partial speech, voice and linguistic communication disorders but also those without clear difficulties, e.g. owing to an improvement in the ability to concentrate. Thus, such a therapy is a versatile, non-intrusive and safe method for patients who have problems and those who just want to increase their personal potential.

What does listening to Mozart's music have in common with concentration, higher self-esteem and foreign language learning? It turns out that owing to auditory training developed by Alfred Tomatis, a French otolaryngologist, it is possible to influence the quality of learning in even the youngest children. Within the EU programme, 'Attention! The Way to Success', which was implemented in the years 2010-2013, this method was introduced into the curriculum in 87 Polish elementary education classes.

Early-school education is a big challenge. Small students already have their first duties and homework which are assessed and compared in the group of peers, and that induces considerable stress in children. Therefore, small children become ill often, infections recur frequently, which may be the reason for concentration disorders, difficulties in speaking, reading, writing or learning problems. If we add other possible conditions, such as autism, ADHD, as well as speech, sight or hearing disorders, the learning difficulties become even greater.

The latest research shows that problems with auditory attention play an enormous role in communication disorders. The reasons for this situation should be looked for in past diseases and in experience brought by young students from early childhood. The method developed by Alfred Tomatis, which is the key element of the curriculum in the project under discussion, focuses on improving the function of auditory attention.

About the project

The 'Attention! Method for Success' project is implemented by Young Digital Planet in partnership with the Institute of Physiology and Pathology of Hearing, and it was co-financed by the European Social Fund. Its assumption involves the improvement in the quality of teaching and learning of children with special educational needs, due to a pilot implementation of an innovative teaching programme based on the Tomatis Method supported by auditory exercises and logorhythmics classes.[1] The main objective, on the other hand, involves assistance in the creation of appropriate conditions for more effective teaching and learning for children with special education needs as well as for actions stimulating and supporting the development of auditory attention, also in children following a standard curriculum.

Training was provided to teachers, guidance counsellors, psychologists and speech therapists, which allows for therapeutic work using the Tomatis Method on the pedagogical level. Public schools, integration schools, schools with integration classes and special schools took part in the project. At the very beginning, in 2010, teachers conducted a procedure qualifying for the therapy. 770 first graders whose development diverged from the norm were involved. They were subjected to a few series of ear stimulation using an appropriately transformed audio signal. Therapeutic sessions were divided by breaks of a specific length (four-six weeks). At the end, the therapists administered the attention and auditory lateralization[2] test again to assess the children's progress.

Alfred Tomatis

Alfred Tomatis (1920-2001) was a French otolaryngologist, neurologist and phoniatrician, the author of 14 books and numerous scientific articles, he conducted research on the connection between hearing, voice and speech. His work resulted in the introduction of sound therapy into clinical practice (voice, speech) and the construction of an electronic ear – a special device which allows for increasing sound intensity at defined frequencies in a selective manner.[3] Tomatis introduced a distinction between the notions of hearing and listening, and his in-depth research and own experiments led him to formulate three principles called the Tomatis Laws:

1. The voice contains only those frequencies which can be heard by the ear.
2. The modification of the way of hearing causes an automatic unconscious change in the voice.
3. A permanent change of the voice is possible by the application of an appropriate auditory stimulation continued for a certain period of time (Thompson, Andrews, 2000, pp. 174-188).

His discoveries were officially confirmed by the French Academy of Sciences and in 1951 Alfred Tomatis was named Knight of Public Health of France.

About the method

To understand the auditory training, one needs to distinguish between hearing and listening first. Hearing is a passive process which depends only on the efficiency of the organ of hearing; it is the reception of surrounding sounds. It can be impaired if the ear becomes damaged. Listening, on the other hand, i.e. auditory attention, is an active process – the perception of sound and using information received from it. Important messages are extracted from the stream of all sounds which reach the human ear and less important messages are rejected. Thus, auditory attention can be compared to a filter, which cleans the information flow from redundant information. The decision of what is important or not is very individual and it depends on the life experience of a given person and his/her emotional state. It is an easy guess that the lack of a properly functioning filter may be manifested by various symptoms. Auditory perception may be distorted by difficult events which left an emotional mark on a young person's psyche. As the process of listening and communicating is shaped already in childhood, difficult experiences from this period may considerably distort one's development. According to Tomatis, listening is a willingness to communicate with those around and when this process is disrupted, the child may not feel like establishing contact with the external world. Such an attitude may inhibit the development of the listening ability and lead to various disorders disturbing the child's functioning in his/her adult life.

Thus, the ability to listen affects how we receive and perceive the surrounding world. It also plays a fundamental role in speech perception and in the learning process. Auditory attention disorders may contribute to the development of speech problems (articulation disorders, delay in the development of speech, stuttering), learning problems (dyslexia, difficulties at school) and attention problems. Even if the process of acquiring the ability to listen is disrupted, it is possible to overcome this problem through re-education. This is what the therapy developed by the French scientist is used for.

Diagnosis and listening training

Children participating in the project were subjected to a diagnostic procedure – i.e. a test of auditory attention and lateralization, which is similar to auditory testing. It combines elements of audiology[4] (definition of auditory sensitivity) and psychology (attention directed to sounds with various frequencies and the ability to differentiate between them).

The results showed different auditory attention disorders. These included, amongst other things: problems with auditory analysis and synthesis of speech, problems with reading and writing, dyslalia[5], expressive alalia[6], stuttering, voice disorders (dull and stumbling voice) various attention disorders, psychomotor hyperactivity, low level of motor activity, spatial orientation disorders, lowered coordination within gross motor skills, no sense of rhythm, fatigability, immaturity, emotional instability, low motivation and low self-esteem with a tendency to withdraw or to manifest a negative or aggressive attitude. A majority of children included in the therapy are children without any special educational needs (63%) and with mild mental impairment, including Downs syndrome (1%), autism (6%), cerebral palsy (2%), speech impairment (10%), behavioural disorders (5%) and other diseases (13%).

The method, which children associate with play and is, therefore very well received by them, is aimed at improving the ability to communicate and it also changes the students' attitude towards others and themselves. They become more open, are able to focus better, they calm themselves down or increase their own activity, they are more creative. First of all, as therapists emphasize, they are bolder and have more self-confidence, which influences their whole development.

Auditory training took place using appropriately selected sound materials and audiovocal exercises which increased control of the voice and speech. While playing, the children were listening to appropriately processed music by Mozart, Gregorian chant and for some children, depending on the results of diagnoses, also a specially processed voice of their own mother was prepared.

Why Mozart? His music is characterized by high dynamics and a high content of harmonics (aliquots)[7] with high frequencies, thus strong stimulating effects. Gregorian chant, on the other hand, has a calming, soothing and physically consolidating effect. These two types of works of music are often used alternately, adjusting the listening programme to the child's needs. Waltzes, children's songs and read-out texts are also used.

At a subsequent stage, the children read and sang to the microphone. In this way, they learned to listen to their own utterances and to control them using their improved ability to listen. Both during the listening stage and the exercise stage, sounds transformed by the electronic ear are used, which changes sounds in such a way that they do not resemble the original tones – the stimulation is the most intensive then. This special device allows for listening to sounds through the air and bone conduction, which makes it possible to stimulate the auditory attention – both internal and external. It mostly has a therapeutic effect, it processes sounds, and music is only material for its work.

Kacper's case

Kacper is 10 years old and has symptoms of Asperger syndrome, autism and ADHD. When he joined the project, the symptoms of these disorders were very severe. He lost his temper quickly and had aggressive outbursts caused by trivial events: his mother told him to wear clothes that were too tight and a friend from school made a better cardboard collage. He was hypersensitive to touch – because of an ordinary stitch in a sock he wanted to escape through a window. He often made scenes, he had learning and concentration problems and he could not read or count. After the Tomatis therapy and other treatments (biofeedback and dog therapy), Kacper calmed down, he already wears normal clothes, he cooperates during activities which require being touched – cutting his hair, clipping his nails. The aggressive outbursts stopped. He learned how to read using the syllabic approach: he is able to concentrate better. His artistic and musical talents were revealed. He has good contacts with his peers. He did not like the first Tomatis sessions, he could not sit still. Later, he asked when the next class would be. Kacper's mother says that if she had not known him before, she would not believe that this was the same boy.

Training cycle

Students participated in the Tomatis Method training in the first and third year of learning at school – each time three sessions were held consisting of 30, 15 and 15 hours of exercises, separated by breaks lasting from four to eight weeks. Such breaks are necessary for children to get used to changes and integrate them. Before each therapeutic session and after its completion, an auditory attention test was administered to the children.

Application and Use

Opinions of teachers conducting the therapy and the parents of students taking part in it are mostly positive or neutral. The caregivers emphasize a particularly significant change in the children's openness to peers and other people, greater boldness and self-confidence, better concentration, willingness to participate in classes and games, increased activities during classes. After the completion of the therapy the children are better learners, they are more willing to talk about topics discussed in class, begin to read with comprehension, they communicate more easily, articulate tasks, develop artistic talents, and they are more willing to take part in school celebrations.

In the first and third year of the project, each teacher had 198 hours at their disposal each year using the Tomatis Method (logorhythmics classes took place during the second year). To examine its results, a key competence sheet was developed, by means of which all children taking part in the project were examined, both those unqualified and qualified for the therapy. Selected indices were examined within the individual competences:

- Learning ability: memory, attention, the use of knowledge in practice, motivation and faith in one's own possibilities;
- Social competences: the ability to work in a group, understanding and respecting rules and principles, expressing and understanding various points of view;
- Linguistic competences: perception (understanding of speech, non-verbal reactions), expression (active speech, verbal reaction), sensitivity to spoken language;
- Musical competences: perception and expression of music.

When we compared the results of both groups of students, it turned out that a greater improvement in key competences occurred in children subjected to the Tomatis Method (cf Table 1).

Application

Listening training mostly helps children with dyslexia and difficulties in learning, suffering from ADHD and attention deficit disorder. In the majority of cases, there occurs a definite improvement in learning and behaviour and children begin to read with comprehension. In children suffering from ADHD, auditory training may improve their ability to concentrate and auditory perception and reduce excessive activity by decreasing auditory hypersensitivity.

The French researcher's method may be effective also during the treatment of hearing disorders which are manifested by problems with source localization and differentiation of sounds, difficulties in understanding distorted speech, especially in the presence of interfering stimuli.

Auditory stimulation trains all functions which may become impaired.

While speaking of the listening training, also autism needs to be taken into consideration, i.e. an extreme case of cutting off communication with other people. According to Tomatis, a person suffering from this disorder listens with 'their whole body' and is deprived of protection for excessive external stimuli. He/she cannot filter significant information from noise and feels attacked by external stimuli and protects himself/herself from them. The therapy may decrease the hypersensitivity symptoms and improve communication with other people.

The Tomatis Method works well also for speech disorders, delayed development, incorrect articulation or stuttering. Its use in the treatment of speech disorders may have a stimulatory effect, improve speech perception and its control. It happens that auditory differentiation problems occur in some children with articulation disorders, then the therapy improves

auditory perception, owing to which the child begins to hear his/her own mistakes and is able to correct them and restore the fluency of speech.

Treatment of voice disorders is one of the primary applications of the method under discussion. Listening training, apart from voice production exercises, physiotherapy or medical treatment, can be a valuable method complementary to rehabilitation, as it improves the ability to control one's own voice. The aim of the Tomatis Method does not involve the replacement of standard therapies, e.g. speech therapy or medical treatment. However, it can speed up progress and make it easier for the therapist to work with the child.

Tomatis thought that the ability to listen is also connected with energy level and creativity. He assigned a special role to sounds characterised by a high content of high frequencies – owing to which listening training can be a mild and energizing way of decreasing mental tension and improving the mood. The Tomatis Method can be used in periods of lower energy levels, tiredness, mild mood disorders and burn-out as it influences personal development. However, it should be remembered that in the case of more severe disorders, e.g. clinical depression, auditory therapy cannot replace psychiatric care. The Tomatis Method is not recommended for people who have distinct psychiatric problems, e.g. schizophrenia.

Foreign language learning is one of flagship applications of the listening training. Growing up in the mother tongue environment teaches our brain how to precisely differentiate occurring sounds, while it 'forgets' the ability to recognize sounds which are not present in the language. When we want to learn a foreign language, we need to recall this ability. Auditory training allows one to exercise the skill of differentiating sounds occurring in the language which we want to learn. For this purpose, recordings of sounds, words or texts in foreign languages are provided through the electronic ear and foreign pronunciation is practised with it.

Józio's case

Józio had been a healthy and well developing child since birth. He grew fast, crawled, learned to eat by himself and spoke single words, he was ahead of his peers in development. Alarming symptoms began to appear when he turned one. First of all, he stopped communicating. The diagnosis was quite quick: autism. The whole family had to switch to living with an autistic child who communicated his needs only by shouting. The breakthrough came after Józio's fifth birthday – he had the first Tomatis session and began to speak. Then, he took part in the project 'Attention! The Way to Success', he participated in subsequent sessions and made further progress: he spoke more grammatically, his vocabulary grew on a regular basis. He began to sing because he always liked it but previously he was ashamed of his voice. He has artistic talents – he learned how to use the Paint software in which he creates his own paintings. He is creative, curious about the world and is becoming more and more open to it.

In conclusion

Listening therapy has been becoming more and more popular over the years. It is currently used in nearly two hundred centres all over the world, also in Poland, and it is one of the most advanced methods for improving auditory attention in children exhibiting speech and voice disorders, dyslexia, autism, ADHD, and who have learning problems. It was used for the improvement of voice quality and foreign language learning by famous singers and actors, for example Maria Callas, Romy Schneider and Gerard Depardieu.

Contemporary research confirms numerous findings by Alfred Tomatis. The issue of central auditory processing disorder, which he described a few decades ago, has recently enjoyed a growing interest. And despite the fact that contemporary science tends to look for the

sources of the problem in the central nervous system rather than in the middle ear, as the professor thought, numerous studies show that his method may be a valuable enhancement of the therapy for children with auditory attention disorders and support their development and learning.

One of the assumptions of the 'Attention! The Way to Success' project was a 50% improvement in students' results in the area of auditory attention. The research which we conducted during the project shows that this result has been achieved. However, it is not only these effects that show the value of actions performed. Towards the end of the third year of project work, the teachers claim that the proposed curricula using logorhythmics classes and the Tomatis therapy have brought very good effects. A few schools, due to the effectiveness and very good results of the methods used, not only in children with special education needs, have decided to implement the proposed method of teaching into their own curricula and to continue it also after the completion of the project, which has enriched their educational offer. Head teachers took into account the opinions of teachers, parents and children who were the most interested in classes and who were looking forward to the next ones.

1. Logorhythmics – one of logopaedic techniques, based on musical rhythm together with the use of words included as accompaniment (programmed or improvised) to the motion of the entire body rhythmically harmonized by music (Skorek, 2010, s.94).
2. Just like there exist preferences for using one hand (usually the right one), there is also a preference for the leg, the eye and the ear. Tomatis, while examining auditory control in professional singers, discovered that in a situation when they controlled their voice using both ears or only in the right ear, they sang in tune and they fully controlled their voices. When the right ear was blocked and they could hear only with the left ear they began to sing out of tune. On the basis of this experiment, he concluded that the optimal method of controlling the voice is the right-ear control. This results from the physiological asymmetry of the human brain: the auditory cortex receives the majority of stimulation from the opposite side, i.e. the information from the right ear gets mostly to the left hemisphere and the other way round, although there exist also neural pathways which stimulate the same hemisphere. The right hemisphere is the non-verbal hemisphere engaged in emotional processes while the left one is verbal and logical. Therefore, Tomatis thought that a left-eared person first reads the emotional load of an utterance and only later its contents. In such a person, strong emotions may significantly affect his/her communication process.
3. In 1958 the first electronic ear was presented at EXPO in Brussels where Tomatis won a gold medal for scientific research.
4. Audiology – science of hearing, a branch of otorlaryngology connected with the physiology of hearing and diagnosis, treatment and rehabilitation of disorders occurring within the organ of hearing; a science of properties and operation of the sense of hearing and its disorders, preventive treatment and rehabilitation of persons with hearing impairment (Surowaniec, 2008, p.144)
5. Dyslalia – a speech impairment, involving, amongst other things, the incorrect pronunciation of phonemes and articulatory disorders (Surowaniec, 2008, s.240)
6. Expressive alalia – systemic underdevelopment of expressive speech, failure to form linguistic functions connected with the process of building verbal utterances with retained sensomotoric functions; utterances are unintelligible for others, difficulties in communication make it necessary to use extralinguistic means, i.e. gestures and signs (Surowaniec, 2008)
7. Aliquots – component tones of a sound (Surowaniec, 2008, p97)

TOMATIS®

The TOMATIS Method is a technique of sound sensory stimulation. Sound is transmitted, on the one hand, by bone conduction caused by a vibration in the upper part of the cranium, and on the other hand, by aerial conduction passing through the ear's auricle. The sounds we use in our devices have been preliminary treated with the TOMATIS effect in our laboratory, and thus stimulate the entire inner ear, including the parts that affect both auditory and motor functions. The sound propagates first in the tympan, and then by bone conduction, triggering a reflex that contracts and relaxes the two muscles known as the stirrup and hammer muscles. This effect is obtained by means of a perceptual sound contrast (a two-fold alternance of timbre and intensity) intended to 'surprise' the ear. For more information: www.tomatis.com

Table 1

COMPETENCE	The percentage of students subjected to the Tomatis therapy who achieved a higher result as compared to the base year (September 2010)	The percentage of students not subjected to the Tomatis therapy who achieved a higher result as compared to the base year (September 2010)
Learning skills	**63%**	**58%**
Attention	33%	23%
Memory	35%	29%
Using knowledge in practice	39%	36%
Motivation and self-confidence	47%	39%
Social competencies	**67%**	**58%**
Ability to work in a group	55%	44%
Understanding and respecting rules and principles	33%	23%
Expressing and understanding various points of view	51%	43%
Linguistic competences	**75%**	**66%**
Perception (understanding speech, non-verbal reactions)	44%	34%
Expression (active speech), verbal reactions	59%	49%
Sensitivity to spoken language	58%	45%
Musical competences	**75%**	**68%**
Perception of music	63%	58%
Expression of music	62%	53%

Magdalena Brozio: A graduate of Journalism and Social Communication and the School of Business Coaching, who used to work as a journalist. In the 'Attention! The Way to Success!' project, she runs the website, amongst other things. She is responsible for contacts with parents of children taking part in the project. An indefatigable tracker of positive effects of the Tomatis therapy. Apart from her project work, she also writes articles for companies and websites and works in the social media sector.

Marzena Mularzuk: A graduate of a pedagogy faculty and post graduate speech therapy and surdologopedics (speech and language therapy for the hearing impaired). Since 2000, an employee of the Institute of Physiology and Pathology of Hearing in Warsaw, initially employed at the Clinic of Voice and Speech Disorders and currently at the Clinic of Audiology and Phoniatrics. She participates in the implementation of science and research projects in the area of speech therapy, pedagogy, pathophysiology of the communication process and stuttering therapy. The author and co-author of publications with a national and international reach. She is a certified Tomatis Method therapist (Tomatis Development).

Joanna Ratyńska: She holds a doctoral degree in medical sciences; she is an otolaryngologist, audiologist and phoniatrician. A graduate of the Medical Academy in Warsaw. She completed a first degree with specialization in otolaryngology in teaching hospitals of the Medical Academy in Warsaw, obtaining this in 1999. In 2007, she completed a second degree specialization in audiology and phoniatrics. Since 1996 she has been an employee of the Institute of Physiology and Pathology of Hearing, she was initially employed at the Department of Preventive Treatment and Early Detection of Hearing Impairment, and later at the Audiology and Phoniatrics Clinics. In 2008, she defended her doctoral dissertation entitled Assessment of the usefulness of the digital speech corrector in stuttering patients. She participates in the implementation of science and research projects in the area of pathophysiology of the communicative process and in educational work. The author and co-author of 60 studies with a national and international reach. She is a certified consultant of the Tomatis Method, a member of the International Association of Registered Certified Tomatis Consultants (IARCTC).

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Research at Ecolint - Looking ahead to the 2016 Edition

Steve Higgins' article in this edition of the Ecolint Research Journal highlights the interest and importance of educational research for teachers. The 2016 edition of the Ecolint Research Journal will feature articles from other academics writing on this subject, but will also provide an opportunity to share the research undertaken by colleagues across the Foundation. Recent research by those studying for higher degrees will be available to read and will include, teachers' attitude towards science in the Primary Years Programme, Notebooking with ipads for second language learners and developing higher order thinking skills through the Odyssey of the Mind Programme.

If you have recently completed a dissertation or thesis please send us your abstract, as we would like the 2016 Research Journal to present an overview of all the research being carried out by teachers in the Foundation.

Alison Ball and Frédéric Mercier