

## Fourth Young Researchers Days in Logic, Philosophy of Science and History of Science

**Friday the 26<sup>th</sup> of September (Louvain-la-Neuve)**

**9h30-11h :** *Tinne Claes* : Empty bodies

*Veronique Deblon* : Constructing Belgian Anatomical Science: Collections and Intellectual Property (1830-1860)

*Koen Tanghe* : 2014: The Weismann year that was not

**11h :** coffee break

**11h30-12h30 :** *Bernard Smette* : Quine : translation as an epistemological tool

*Julie Mennes* : Philosophical framework for facilitating interdisciplinary research

**14h-16h :** *Merel Lefevere* : Unification, resemblance questions and anesthesiology

*Inge De Bal* : Analysing physical causation : the biomedical sciences as a source of inspiration

*Stéphanie Van Droogenbroeck* : Clinical Expertise and Evidence-based Medicine in Practice

*Charlotte Luyckx* : Toward an integrative medicine : practical and epistemological issues

**16h :** coffee break

**16h30-17h30 :** *plenary lecture of keynote speaker Mieke Boon* : Scientific concepts as Epistemic Tools

**Saturday the 27<sup>th</sup> of September (Brussels, Prigogine room)**

**9h-11h :** *Stany Mazurkiewicz* : Hegel: infinity between mathematics and dialectical logic

*Lorenz Demey* : A Unified Account of Aristotelian and Hasse Diagrams

*Niel Coleman* : Extra 'Empirical' Virtues in Logic: The Philosophy of Science... of Logic?

*Joachim Frans* : Unification and Explanation in Mathematics

**11h :** coffee break

**11h30-12h30 :** *plenary lecture of keynote speaker Christoph Lüthy* : Words, Diagrams, Images: Problems for a History of Scientific Images

**14h-15h30 :** *Ye Yang* : Pietro Pomponazzi's Conception of Natural Necessity

*Pierre Bonneels* : L'empirisme tremblant du langage dans l'oeuvre de jeunesse du philosophe japonais Ômori Shôzô

*Paloma de la Vallée Poussin* : Stability: History of equilibrium

**15h30 :** coffee break

**16h-17h :** *Olivier Dubouclez* : Subitizing and Simultaneous Perception of Objects in Renaissance and Early Modern Psychology

*Dietlinde Wouters* : The success of truth commissions. A social-epistemological analysis

**BONNEELS Pierre (PhD student, Université Libre de Bruxelles)**

***L'empirisme tremblant du langage dans l'oeuvre de jeunesse du philosophe japonais Ômori Shôzô. Comment traduire les concepts logiques d'Ômori Shôzô en français ?***

Le but de cette communication est d'abord de présenter la logique et la philosophie telles que le philosophe japonais Ômori Shôzô la conçoit. Deuxièmement, nous nous attellerons à la tâche d'ordonner cette vision et par là dégager les points importants qui constituent sa pensée de jeunesse.

Ômori Shôzô est empiriste et pour lui le défi est d'expliquer qu'en référence avec la nécessité des phrases logiquement vraies, cette nécessité doit être fondée sur l'expérience.

Pour nous préparer à ce problème, nous allons décrire des observations banales au sujet du mot 論理学 (*ronrigaku* – trad. logique, science de la logique). Car il s'agit bien de nous situer dans le langage vernaculaire qui accueille la pensée d'Ômori, le japonais. Dans ces limites nous pouvons dégager deux concepts : celui de 論理 (*ronri* – trad. logique) et de 学 (*gaku* – trad. science). Comme l'idéogramme 学 signifie le fait de faire une étude, nous pouvons comprendre que les termes de 論理学 font référence à l'étude de la logique. Cette dernière différenciation est au regard de la pensée Ômoricienne extrêmement importante. C'est à partir de cette séparation que nous aborderons la philosophie de la logique telle que présentée par Ômori. Fort de cette analyse nous parlerons donc §1 du sens de la logique pour voir ensuite §2 son sens compris en tant que science. Dans une troisième partie, à partir de la logique comprise en tant que science nous discuterons §3 la provenance de la nécessité que comportent en elles les phrases logiques.

**CLAES Tinne (PhD student, Katholieke Universiteit Leuven)**

***Empty bodies. Autopsies in the disciplinary struggle between anatomists in Brussels, 1870-1920***

In 1906, an assistant for the university course in anatomy complained that too many bodies that were to be used for dissection, had already been autopsied. He could not teach the students human anatomy by means of 'empty bodies'.

In the late nineteenth century, a shortage of bodies led to a dispute between anatomists in Brussels. By depicting the autopsy as a humane and scientific practice -unlike the dissection - pathological anatomists assured themselves a place of honor in the distribution of bodies, both in hospital and city laws. An analysis of the rhetoric of pathological anatomists sheds light on the practice of disciplinary boundary work, both in the scientific and the broader cultural domain.

Pathological anatomists emphasized the difference between dissections and autopsies. Dissections were depicted as cruel and drastic, invoking natural feelings of repugnance among the masses. The autopsy, on the other hand, was represented as a decent and respectful practice that was in the best interest of both the family and society as a whole. This argumentation was successful. Whereas the regulation concerning dissections was tightened up, the city council of Brussels gave physicians the right to order an autopsy for every hospital patient who died under their care. As a result, tensions in the hospitals rose. In the face of complaints, pathological anatomists were forced to justify their advantageous position in the distribution of cadavers towards the hospital board. They argued that autopsies led to innovative science, while dissections only served educational purposes. An emphasis on the microscope rather than the scalpel, gave pathological anatomy both a scientific and a humane aura. During the dispute, the meaning of anatomical science changed. Anatomy was redefined as a delicate laboratory science, which tried to respect the individual's bodily integrity and the sentiments of the family.

**COLEMAN Neil (PhD Student, University of Bristol, collaborates with the Centre for Logic and Philosophy of Science, Vrije Universiteit Brussel)**

***Extra 'Empirical' Virtues in Logic: The Philosophy of Science... of Logic?***

Logics, I argue, are not solely evaluable in terms of their correspondence to a particular phenomenon. Additional 'virtues' ought to be treated as relevant modes of assessment to logics, even in the traditional areas of mathematics and philosophy. In part one I will motivate the need to consider what I will call extra-'correspondence' virtues by appealing to the already prominent use of idealisation and abstraction in logic (e.g. Colyvan [2013]). Given that logics cannot be understood as perfectly instantiating their subject matters (whether these are deductive norms, truth-preservation or a special class of conceptual relations) additional modes of assessment are required if we are to understand the norms governing the construction and application of logical systems.

In the second part of the talk I suggest that we look over to the work of our colleagues in the philosophy of science. The need for additional virtues mirrors that of underdetermination in theory choice, an already well-established issue in the discipline. While it is controversial within the philosophy of science whether such 'extra-empirical' virtues are pertinent to assessment, and whether they are really irreducible to empirical modes of assessment, it is undeniable that they are a useful heuristic with which to discuss theory construction and evaluation.

As such it is my suggestion that we borrow such tools from the philosophy of science, and begin to consider the role and nature of these extra-correspondence virtues in logic. The same questions arise: what virtues are present in logic?

What role do they play in the overall evaluation of a logic? Are these virtues reducible, eliminable, or primitive? Such an approach promises to shed light on old questions (e.g. what status do traditional metalogical theorems hold?) whilst also highlighting a new practise-led approach to the Philosophy of Logic.

**DE BAL Inge (PhD student, Universiteit Gent)**

***Analysing physical causation: the biomedical sciences as a source of inspiration***

Physics is, contrary to other scientific disciplines such as the biomedical sciences, not straightforwardly causal. The laws of physics are notoriously symmetric, both timewise and formally.

Compare "smoking causes lung cancer" – a law from the biomedical sciences – to " $F = ma$ " – Newton's second law of motion. The first clearly distinguishes between cause and effect, the latter does not; there is no straightforward causal direction. Yet, we make causal claims about physical phenomena – e.g. that hitting the billiard ball caused its movement – and act accordingly. How can we study these claims?

I propose to take (causal modeling in) the biomedical sciences as a source of inspiration. Causal claims in the biomedical sciences refer to populations. 'Population' is the concept that pins down what a biomedical causal claim is about. For instance, the causal claim "smoking causes lung cancer" refers to all humans and not to fish. If we want to analyze causal claims about physical phenomena in a similar way, we first need a concept that plays a similar role as 'population', namely pin down *what* exactly we make claims about when making causal claims about physical phenomena.

In this paper I will:

- introduce the concept 'physical setup' and illustrate its functioning.
- argue that causal claims about physical phenomena can be understood as claims about (types of) physical setups. So the concept allows us to pin down what exactly we make claims about.
- demonstrate that there is a second way in which the biomedical sciences can provide guidance. Not all possible populations are interesting. For instance, the population of all people whose first name starts with the letter "a" is not an interesting population for biomedical scientists. Similarly, not all sets of physical setups are equally interesting. I illustrate this point and put forward selection criteria for interesting setups.

**DEBLON Véronique (PhD fellow, Katholieke Universiteit Leuven)**

***Constructing Belgian Anatomical Science: Collections and Intellectual Property (1830-1860)***

Conflict about property was a recurring topic in Belgian anatomical cabinets during the nineteenth century. Anita Guerrini has shown for the early modern period how the dispute about ownership of anatomical collections also revolved around 'intellectual property'. Though the question of ownership is often evoked in relation to the 'gift' of anatomical specimens, there is rarely a focus on the aspect of 'intangible property'. This paper investigates the meaning of the debate about property within the context of the development of a Belgian anatomical science. Notable absentee in the debate about ownership were the relatives of the people whose bodies were the subject of autopsy or dissection.

After the reorganisation of the higher educational system in 1835, the state wanted to acquire all property rights of collections at state universities. At the University of Ghent, the regulations of the anatomical theatre stated that professors were obliged to deposit specimens at the university's anatomical cabinet. By doing so they gave up any claim of revendication. The professor did however retain the ownership of the observations of these pathological lesions. In this context ownership consisted of a form of 'intellectual property', even though it was not named as such.

The preparation of specimens was connected to intellectual labour and individual prestige. Preparations were the result of a personal - sometimes secret - technique and were perceived as an expression of talent. Specimens were therefore often associated with a certain individual. This became more clear in the presentation of a specimen to a scientific audience. Even though the state possessed all property rights, the role of the individual would stay essential when communicating about these collections. The disputes regarding property did not only concern ownership, but involved questions of prestige and changing ideas about scholarship as well.

**DE LA VALLÉE POUSSIN Paloma (PhD student, Université Catholique de Louvain La Neuve)**

***Stability: A short history of equilibrium***

Since Antiquity, the study of equilibrium has been an important part of mechanics. Two famous examples are the lever or the scales and the floating bodies. The equilibrium of the lever or the scales was described in the "*Mechanics*" of Pseudo-Aristotle by means of the principle of virtual velocities, which specifies a state of neutral equilibrium. On the other hand, Archimedes discovered the equilibrium of the floating bodies that was a stable one: it was the position towards which the bodies leaned. Since then, equilibrium has been understood to be either neutral or stable; and is described as an alignment of forces and particular points.

Later on, Stevin distinguished unstable equilibrium from stable equilibrium, and formally expressed the differences in the "*Art of weighting*" (1586). In the "*Scientia Navalis*" (1749), while studying floating bodies in general, Euler theorised that stable and unstable equilibrium must alternate.

Another principle of equilibrium exists, in relationship to the potential. Its story begins with Torricelli, who referred to a new principle in the "*Opera Geometrica*" (1646), according to which systems of weights can only spontaneously move if their centre of gravity descends. This principle led Huygens to derive a new theory: a system of weights can only rest, or be in equilibrium, if its centre of gravity is at its lowest. These two first steps ultimately resulted in the view that a stable equilibrium corresponds to a minimum of the potential, or a maximum of the live forces. Another form of equilibrium can be derived from the relationship between these concepts: a stable equilibrium is such that any perturbation to a system generates oscillations of limited amplitude.

This study provides a brief review of the historical foundations of these important principles of equilibrium. It then looks at why Euler's theory (that stable and unstable equilibrium must alternate) was too restrictive and called for further research. In this context, the talk presents the generalisation discovered in the 19<sup>th</sup> century in the field of floating bodies by Dupin, Reech and Guyou. They used the notions of potential, live forces and limited oscillations to finally arrive at a theory that is now considered sound.

**DEMEY Lorenz (Postdoctoral fellow FWO, Katholieke Universiteit Leuven)**

***A Unified Account of Aristotelian and Hasse Diagrams***

The aim of this presentation is to study the relationship between two important families of diagrams that are used in logic, viz. Aristotelian diagrams (such as the well-known 'square of oppositions') and Hasse diagrams. After briefly introducing these two types of diagrams and discussing their importance, I will discuss some important similarities and dissimilarities. Next, I will argue that the dissimilarities are perfectly in line with general cognitive principles of diagram design, such as the principles of congruence, apprehension and information selection. In short, I will show how the differences between both types of diagrams are natural consequences of the fact that they aim to achieve different visualization goals. Next, I will show that a much deeper connection can be established for Aristotelian/Hasse diagrams that are closed under the Boolean operators. (This restriction is not severe, since every Aristotelian diagram can be embedded inside a Boolean closed Aristotelian diagram.) I will consider the Boolean algebra  $B_n$ , which has  $2^n$  elements, and whose Hasse diagram can be represented as an  $n$ -dimensional hypercube. I will then show that both the Aristotelian and the Hasse diagram for  $B_n$  can be seen as  $(n - 1)$ -dimensional vertex-first projections of this hypercube: (i) if the projection is along the hypercube's general entailment direction, then the result is an Aristotelian diagram, and (ii) if it is along any other direction, then the result is a Hasse diagram. This account thus provides a unified perspective on Aristotelian and Hasse diagrams, since it allows us to see the various dissimilarities between both types of diagrams as merely different manifestations of a single underlying choice, viz. the choice of the projection axis of the vertex-first projection (along the hypercube's entailment direction vs. along any other direction). Finally, I will illustrate the explanatory power of this account by applying it to some well-known Aristotelian/Hasse diagrams for  $B_3$  and  $B_4$ .

**DUBOUCLEZ Olivier (Postdoctoral fellow Marie-Curie, Université de Liège)**

***Subitizing and Simultaneous Perception of Objects in Renaissance and Early Modern Psychology***

Subitizing is the ability to judge the numerosity of simultaneously presented objects up to a certain limit (usually a maximum of 3 or 4 items) without any recourse to actual counting, enumeration or matching. Such a mental ability has been extensively studied in contemporary experimental psychology in relationship with the origin and learning of mathematical skills in children. Some scholars have especially emphasized that subitization depends on attentional or preattentional capacities of the human visual system.

In my presentation, I would like to show that the problem of simultaneous apprehension of objects has a deep background in the history of philosophy and that from the Middle Ages onwards an original treatment of that issue has been proposed in European Universities. Against the Thomistic claim that either sensible or intellectual apprehension cannot bear on more than one object at a time (in connection with only one form), a different psychological tradition has gradually emerged from the writings of Gregory of Rimini and John Buridan with a far-reaching impact on late Scholasticism (Suarez, Coimbrian fathers, Rodrigo de Arriaga) up to Cartesian philosophy.

I will focus on the arguments supporting the view that human perception includes a sense of multiplicity as such and that it can be extended to intellectual skills (I); I will insist that such a conception is linked to the growing importance of the theme of attention in early modern theories of knowledge (II). Finally, I will provide elements on the way the question of subitization or simultaneous perception may have been transmitted to Descartes and Spinoza and claim that it is a peculiar aspect of the concept of intuition, as well as a whole chapter of the history of cognitive psychology, still awaiting a thorough investigation (III).

**FRANS Joachim (PhD fellow, Vrije Universiteit Brussel)**

***Unification and Explanation in Mathematics***

Mathematical explanation is a hot topic in current philosophy of mathematics. For this talk, I will only discuss the case of explanation within mathematics itself, and not the role of mathematics in scientific explanation. Although there is a growing consensus among philosophers of mathematics and mathematicians that intra-mathematical explanations exist, only a few authors proposed actual models. This contrast sharply with the amount of literature on scientific explanation.

In the literature of scientific explanation, an important approach is the idea of unification, where explanation is a matter of providing a unified account of a range of different phenomena. Facts or regularities are consequently explained by subsuming them under more general laws. It is not hard to argue that mathematicians are also interested in theoretical unification, since they similarly derive theorems from more general theorems, or show how once considered unrelated problems are in fact related to each other. Consequently, models of unification can be used to investigate mathematical explanation. Kitcher (1989), one of the developers of the explanatory unification approach, defends the idea that his account of unification covers mathematical explanations as well. Hafner and Mancosu (2008) have, however, argued that Kitcher's account defines explanatoriness in a way that goes against mathematical practice.

The question that now arises is where the investigation into the relation between unification and explanation in mathematics goes next. One way out is looking into how unifying power is defined in accounts of scientific explanation, since there is no consensus on how to explicate unification. Schurz and Lambert (1994) formulate an alternative view to the account of Kitcher, offering a unification-based account of understanding. For this talk I will investigate the applicability of this model in mathematics, in order to further clarify whether and what role unification plays in mathematical explanation.

**LEFEVERE Merel (PhD student and teaching assistant, Center for Logic and Philosophy of Science, Universiteit Gent)**

***Unification, resemblance questions and anaesthesiology***

Thanks to Philip Kitcher (1981) the unification account became a very influential way of thinking about scientific explanations in the 1980s. It was the main rival of Wesley Salmon's causal-mechanical account (1984). In Kitcher 1989, the two approaches are compared; as can be expected, Kitcher argues that the unification account is superior. In the 1990s, unification was still respected, but often integrated in a pluralistic view. In the new millennium, explanatory unification fell into disgrace. I believe this decline of the unification account, due to the rise of the counterfactual theory of Jim Woodward (2003) and the mechanistic approach (Machamer et al. 2000, Craver 2007), is unjustified, but understandable. It is understandable because the unificationists chose a wrong way to elaborate the idea of unification. It is unjustified, since scientists still ask resemblance questions. Relevance questions are about similarities between events, explanations which aim at answering them must therefore somehow unify those events. I will use this type of questions, and their answers to suggest another way to develop the idea of unification. This will be supplemented by a case study from anaesthesiology. The on-going search for a common mechanism for general anaesthesiology shows us that explanatory unification still is present in scientific practice. The development of an extended account of unification is both a critique to pure causal-mechanistic approaches and a complementary answer to what explanation is.

**LUYCKX Charlotte (PhD student and research/teaching assistant, Faculty of medicine and Institut Supérieur de Philosophie, Université Catholique de Louvain-la-Neuve)**

***Toward an integrative medicine: practical and epistemological issues***

***Vers une médecine intégrative : enjeux épistémologiques et pratiques***

Dans le monde occidental s'affrontent deux visions de la médecine et du soin : celle dont le corps médical est porteur, c'est-à-dire celle d'une médecine ancrée dans les sciences du vivant (la biomédecine) et celle des défenseurs d'un autre ensemble de pratiques, que l'on appelle, avec hésitation et souvent de façon équivoque, « alternatives », « parallèles », « douces », « ethniques » ou encore « naturelles » (nous retiendrons l'appellation la plus classique dans la littérature : « médecine alternatives et complémentaires » ou MAC ).

Dans cette présentation, nous passerons en revue les problèmes que pose une telle vision dichotomique sur le plan théorique (étant donné les limites de l'une comme de l'autre vision), sur le plan pratique (c'est-à-dire pour rendre compte d'une série de pratiques métissées) et d'un point de vue sociologique (comment cette vision duelle peut-elle expliquer le recours statistiquement croissant des individus aux MAC ?). Nous chercherons sur cette base à esquisser les traits d'une médecine que nous avons choisi de nommer, à la suite de l'appellation retenue par l'OMS, une médecine *intégrative*. Ceci nous mettra face à l'interrogation suivante, que nous développerons : une vision intégrative de la médecine doit-elle viser une convergence des pratiques, abstraction faite des sols ontologiques et anthropologiques divergents à l'intérieur desquels ces pratiques s'insèrent, ou doit-elle, au contraire, viser l'élaboration d'un sol ontologique et anthropologique tiers ? En d'autres termes, le caractère intégratif doit-il porter sur la pratique ou la théorie ?

Nous envisagerons la portée et les limites de chacune des deux options et développerons une position personnelle visant à inscrire ces deux pôles - théorique et pratique - dans des temporalités distinctes. Dans cette optique, nous défendrons l'idée selon laquelle l'intégration progressive, au sein du corpus biomédical classique, d'un ensemble de pratiques alternatives est susceptible, sur le long terme et dans un second temps, d'engager un changement de paradigme théorique en médecine.

**MAZURKIEWICZ Stany (PhD student, Université de Liège & Technical University of Dresden)**

***Hegel: infinity between mathematics and dialectical logic***

The notion of infinity plays a key role in the Hegelian system of logic. Against the Kantian limitations of theoretical reason Hegel declares that "true infinity is the fundamental concept [*Grundbegriff*] of philosophy". What are the origins of such an idea? Commentators usually notice intra-philosophical or theological influences. We won't deny it but will stress a third – scientific – influence present in the theory of infinity exposed by the *Science of logic*. Indeed Hegel, despite his well-known refusal of the analytical or geometrical rationality as a model for philosophy, gives a lot of importance to the concept of mathematical infinity and sees the infinitesimal calculus as a basic example of the dialectics of concrete infinity.

Thus is infinity no more considered as a mental possibility of always adding one more element to a sum, like for the Ancient Greeks, as a useful fiction, like for Leibniz, or as a regulative idea, like for Kant – three theories which don't go over quantitative infinity. Rather is infinity a circular and processual movement existing in the internal *relations* between finite elements making together a totality. Hegel argues that algebra itself opens to such a "synthetic" conception, with, to use a simple example, the following equality:  $1+a+a^2+a^3+\dots = 1/1-a$ , which translates a quantitative "bad" infinity in a relational one. This way, the quantitative mathematical infinity opens to the qualitative dialectical infinity.

But to really carry out this change, philosophy has to break with all forms of mathematical empiricism, including the Kantian foundation of mathematics on pure intuition. Such paradigms can only consider discrete, fixed elements and thus stay prisoners of the quantitative point of view. Here, Hegel refers significantly to Cauchy, who showed that the complexity of the derivative of a function exceeds the possibility of its geometrical representation. The necessity of the *Science of logic* appears to be founded in the history of mathematics itself.

***Philosophical framework for facilitating interdisciplinary research***

'Interdisciplinarity' has become a buzzword, and interdisciplinary research is promoted as a means for scientific progress, or as a goal in itself. However, even if there were agreement on the fruitfulness or desirability of interdisciplinary research, taking an interdisciplinary turn in science is not evident. For example, the varying meaning of key concepts across 'source disciplines' may obstruct interdisciplinary research as is illustrated in the fragment below, which is part of the report of a meeting of biophysical and computational scientists. The scientists indicate concepts that they think are being understood differently by their interlocutors:

"P8: ... every time I hear the word 'diversity' I have to look to see who said it. Because if X said it, X means something completely different than if Y said it ... these terms are funny in terms of who's saying it and what the purposes are if they mean somewhat the same things, but not exactly the same things."

(O'Rourke 2013, p. 1941)

In my paper, I set out the lines of a toolbox that allows for (i) diagnosing problems with respect to conceptual machinery, i.e. systematically describing the meaning variation of key concepts; and (ii) remedying the diagnosed problems, i.e. developing a shared and integrated system of key concepts. In developing the toolbox, I make use of the philosophical literature on scientific revolutions as it pays a lot of attention to the changing meaning of key concepts (across competing paradigms). More specifically, I will use Thagard's (1992) diagrammatic way of presenting concepts as part of taxonomies and enrich his template by incorporating:

(i) the relations of similarity and dissimilarity between concepts (represented by prototypical examples) as described by Kuhn (1977), and

(ii) the information on the attributes of a concept and its subordinate concepts, as framed by Chen and Barker (2000).

**SMETTE Bernard (PhD fellow FNRS, Université de Liège)**

***Quine : translation as an epistemological tool***

Translation has always been a central concern of the philosophy of language. However, it has received more attention over the last decades, as witnessed by the significant development of translation studies and the interest shown in that topic by a range of first-rank philosophers such as Quine, Davidson, Kuhn, Michel Serres, etc.

Quine's work suggests that, although usually understood as a linguistic process, translation is also a process of an epistemological nature. This paper will focus on some epistemological issues of Quine's thesis of the indeterminacy of translation.

First I will stress that Quine's use of radical translation is aimed at putting into question the theory of meaning on which empiricism up to him used to hinge. As I will show, resorting to translation provides Quine with a strong criticism of a notion underlying the epistemology of traditional empiricism, that is the notion of "meaning" as an objective entity.

Secondly, I will point out that this criticism leads to an empiricism of the sort that is not committed to the traditional theory of meaning. I will show how Quine can hold on to an empiricist point of view while doing without the notion of "meaning" by giving a key role to the notions of "observation sentence" and "stimulus-meaning".

Finally, I will emphasize the link between Quine's translation thesis and two other indeterminacy theses (the underdeterminacy of theories by experience and ontological relativity). All these theses, I will argue, share a common structure which is based on Quine's translation model. In the conclusion, I will show how the translating process can be applied to theories (as well as to their ontologies) with the help of what Quine calls a *proxy function*.

**TANGHE Koen (Postdoc fellow, Moral brain group, Universiteit Gent)**

***2014: The Weismann year that was not***

Alfred Russel Wallace is known as the naturalist who doesn't get the credit he deserves. He is the 'Elusive Victorian', the 'Forgotten Naturalist' and 'Darwin's Moon'. Yet, as John van Wyhe points out, "scores of articles and books have been written on Wallace in the past forty years and continue to appear. He is apparently famous for being forgotten!" (2013: 3). There exist three Wallace websites and 20 general Wallace biographies. In 2013, the centennial of his death was celebrated with several new biographies, the publication of his letters, a new Wallace site, a special issue of *The Biological Journal of the Linnean Society*, a BBC documentary, the unveiling of a bronze statue in London's Natural History Museum, etc.

The striking contrast between claims that Wallace is neglected and the abundance of attention he receives becomes even starker when you compare him with a truly neglected and, among a broader public, forgotten biologist: August Weismann. In 1951, Conway Zirkle was one of the first to claim that he is an underestimated figure in the history of biology. Ernst Mayr (1982: 698) called him "one of the great biologists of all time." It is Weismann and not Wallace who is almost univocally seen as the second most important evolutionary biologist of the nineteenth century (e.g., Mayr 1993: 111, Maynard Smith 1989, Bonner 1993: 117, Laubichler and Rheinberger 2006: 195). And yet, there doesn't exist a single website, dedicated to his life and work, we must do with only one outdated Weismann biography (Gaupp 1917) and 2014, the centennial of his death, will pass without celebrations of his achievements. I argue that this persistent neglect is indicative of a more profound anomaly in our current understanding of the history of biology; one that is, itself, partly an emanation of modern, anti-Whiggish historiography.

*References*

- Bonner, J.T. (1993) *Life Cycles: Reflections of an Evolutionary Biologist*. Princeton NJ: Princeton University Press.
- Gaupp, E. (1917) *August Weismann, Sein Leben und Sein Werk*. Jena: Verlag von Gustav Fischer.
- Laubichler, M.D. and Rheinberger, H.-J. (2006) 'August Weismann and theoretical biology', *Biological Theory*, 1 (2): 195-198.
- Maynard Smith, J. (1989) 'Weismann and modern biology', In: Harvey, P.H. and Partridge, L. (eds.) *Oxford Surveys in Evolutionary Biology*, volume 6. New York: Oxford University Press, pp. 1-12.
- Mayr, E. (1982) *The Growth of Biological Thought: Diversity, Evolution, and Inheritance*. Cambridge MA: Harvard University Press.
- Mayr, E. (1993) *One Long Argument: Charles Darwin and the Genesis of Modern Evolutionary Thought*. London: Penguin Books.
- Van Wyhe, J. (2013) *Dispelling the Darkness: Voyage in the Malay Archipelago and the Discovery of Evolution by Wallace and Darwin*. Singapore: World Scientific Publishing.

**VAN DROOGENBROECK Stéphanie (PhD student, Centre for Logic and Philosophy of Science, Vrije Universiteit Brussel)**

***Clinical Expertise and Evidence-based Medicine in Practice***

*Background*

Evidence-based medicine (EBM) is seen as the golden standard for diagnostic and therapeutic measures in clinical practice. The standard definition of EBM states that it is an integration of the best research evidence with clinical expertise and patient values. (Sackett 2000) Some critics (e.g. Braude 2009 and Henry 2006) on EBM mention that it neglects clinical expertise, but the definition on EBM does embrace expertise. However the question remains how this expertise and EBM are used in clinical practice. More specifically, what role does expertise and research evidence play in acute and critical care at an emergency department?

*Methods*

An ethnographic study in two Belgian urban hospitals has been conducted. Patients with internal medical complaints at the emergency departments, two wards and five departments at the outpatient clinic were included. The entire medical setting was observed, semi-structured interviews were taken from patients and their family. These data are analyzed with the grounded theory approach.

## *Results and Discussion*

In acute and critical care situations healthcare professionals are highly time constrained. The use of research evidence is minimized to the mere use of guidelines. Most decisions are almost exclusively based on clinical expertise. Physicians “look for a story that fits”. This strategy implies that physicians apply a method of pattern recognition and want to reach a situation where everything falls into place like a puzzle such that “it feels right”. In short, expertise should get a more prominent role in the definition of EBM.

## *References*

- Braude H. Clinical Intuitions versus Statistics: different modes of tacit knowledge in clinical epidemiology and evidence-based medicine, *Theoretical Medicine and Bioethics*, 30, 2009: 181-198.
- Henry, S.G. Recognizing tacit knowledge in medical epistemology, *Theoretical Medicine and Bioethics*, 27, 2006: 187-213.
- Sackett DL. *Evidence-based Medicine: How to Practice and Teach EBM*, 2nd edn. Edinburgh: Churchill Livingstone, 2000.

## **WOUTERS Dietlinde (PhD fellow, Universiteit Gent)**

### ***The success of truth commissions. A social-epistemological analysis***

In the last 3 decades more than 30 truth commissions were established worldwide. Some truth commissions were better received than others and therefore more successful. For instance: while the commissions of Argentina and South Africa were received quite well, those of El Salvador and Chile were for example less. In El Salvador the report was publicly rejected by the civil government and the army. The first truth commission of Chile (1990) was not allowed to investigate torture and other abuses that did not result in death. Therefore the report was considered unsatisfactory by the victims and by civil society. This led to the establishment of a second commission with a wider scope of inquiry in 2003.

These differences in success are partly caused by differences in political context, yet one may expect that differences in the epistemic quality of the workings and reports of truth commissions also play a role. Possible topics of inquiry here are: differences in selection procedures for commissioners and investigators; differences in the ways in which information is gathered; differences in the explicit aims of the commissions and in the communication procedures.

In my Ph. D. research I plan to analyse four truth commissions (the ones already mentioned: Argentina, South Africa, El Salvador and Chile). I will be drawing on social epistemology as my main methodological source. Social epistemology focuses on the social or collective aspect of science and knowledge. In contrast to the traditional individualistic approach in philosophy of science and epistemology, social epistemologists take into account the fact that scientists accept claims as a result of interacting with other scientists and society in general. Social epistemology was developed to analyse scientific research. In my research I will apply its concepts and methods to a new field. The aim of my paper is to clarify why and how this “transplantation” is fruitful and promising.

## **YANG Ye (PhD student, De Wulf-Mansion Centre, Katholieke Universiteit Leuven)**

### ***Pietro Pomponazzi's Conception of Natural Necessity***

In the present paper I will explore the Italian Renaissance Philosopher Pietro Pomponazzi's (1462-1525) conception of natural necessity in his treatises *De fato* and *De incantationibus* (both written in 1520). The term “natural necessity” in the present paper refers to the regularity of natural occurrences, i.e., the regular connection between causes and effects of natural occurrences. In his *De fato* Pomponazzi examines Alexander of Aphrodisias' refutation of Stoic determinism, as well as Averroes' and Aquinas' views on natural necessity and chance, and gives a deterministic interpretation of Aristotle's notion of chance by stressing the necessity of natural teleology. In his *De incantationibus* Pomponazzi applies the necessary causality of celestial bodies as natural laws to explain wondrous phenomena, miracles, and even the growth and decline of religions. In both *De fato* and *De incantationibus* he discusses the relationship between God's power and natural necessity and attempts to limit God's power in order to make more space for natural necessity. I will examine the major sources of Pomponazzi's discussion on natural

necessity: Aristotle, the Stoics, Alexander of Aphrodisias, Averroes, Thomas Aquinas and John Duns Scotus, and look at Pomponazzi's reception and refutation of these sources, and discuss how Pomponazzi establishes his own view on the basis of these views and how successful I think he is in this task. My conclusion is that Pomponazzi establishes his notion of natural necessity within a providentialist scheme by seeking reconciliation between the views of Aquinas and Averroes. Pomponazzi's conception of natural necessity is an important link between the medieval conception of natural necessity as imposed by God on nature and the early modern notion of laws of nature.

*Key words:* Natural necessity; chance; laws of nature; Renaissance natural philosophy