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Rudolf Archibald Reiss and the Importance of Forensic Science



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One of the most important postulates in the field of forensic science goes “tout contact laisse une trace” (Locard 1920), or “every contact leaves a trace”. While committing a crime, it is difficult, if not downright impossible, to avoid all contact, no matter whether the form of the committed crime is traditional (physical) or modern (electronic transaction). The aforementioned postulate can therefore be adapted as follows: “Each crime leaves a trace”. The desire to track down criminals is probably as old as humanity itself, and several personalities have dedicated their life to this subject, including Hans Gross in Austria, Alphonse Bertillon and Edmond Locard in France, and Paul Kirk in the United States. This article deals with one such man who, despite his merits, has remained somewhat unknown, especially in the German-speaking countries: Rudolf Archibald Reiss. Reiss put his entire life at the service of science, more precisely at the service of forensic science, and became an important pioneer in his field at the beginning of the 20th century. But who is Reiss? What are his achievements and why does he deserve special attention when it comes to the definition of modern forensic science? The purpose of this article is to discuss these questions. We start by providing important definitions before presenting Reiss’s life and work. Based on the aspects of Reiss’s work, which form the fundamentals of modern forensic science, the article then looks at the international status and practical application of forensic science and describes necessary developments. The conclusion emphasises the need to (further) spread Reiss’s vision around the world in order to reach a better understanding of criminality and its traces, as well as better communication between the various actors in the field of forensic science.

1. INTRODUCTION – DEFINITIONS¹

For many centuries, it was normal to force confessions if they weren’t given voluntarily. The possibility to search for and evaluate traces at the crime scene was mostly never considered and if it was, then only as a second choice. With the introduction of the free assessment of evidence in 1873 (Kocher 2003), this course of action began to change.

Rudolf Archibald Reiss lived precisely at this time, namely in the years around 1900.

Reiss was of the opinion that only facts should lead the investigation, and developed methods and concepts that emphasised the importance of traces as investigative information. One of his greatest achievements is probably the founding of the “Institut de police scientifique (IPS)”

(Institute for Scientific Police) at the University of Lausanne (Switzerland), which offered the world's first academic training in the field of forensic science. In order to put this school on a successful footing, Reiss had to be very convincing when dealing with the authorities and at the same time vigorously reject any form of rigid thought processes. In this regard, he acted just like Hans Gross, who is much better known in Austria as the so-called Austrian father of criminology and criminalistics, as well as the author of the well-known "Handbuch für Untersuchungsrichter" ("Manual for Investigating Prosecutors", Gross 1893).

However, there are two important differences between Gross and Reiss. Firstly: the training, because Gross studied law and acted as an investigating magistrate, while Reiss graduated with a degree in chemistry and, through his passion for photography, was provisionally appointed head of the university photographic service at the University of Lausanne. Secondly: while the two men both devoted their life to the development of what can broadly be described as criminal sciences, the former is acknowledged as the father of criminology or *Kriminalistik* (in its German-language definition), while the latter is named a pioneer of forensic science, of the "police scientifique" (scientific police) or "criminalistique" (in its French definition).

Criminal sciences, criminology, *Kriminalistik*, forensic science, "police scientifique", "criminalistique" or the forensic sciences and *Kriminaltechnik*. So many terms, which are mostly used as synonyms, although some are not and their meaning is even dependent on the language (the German term "*Kriminalistik*" does not mean the same as "criminalistique" in French or "criminalistics" in English). The definitions/explanations for these terms are therefore given below. These definitions are the results of thoughts and presenta-

tions of one of the authors (Girod-Frais 2019) and based on discussions with and publications by several international authors (Crispino 2006; Quinche 2014; Ribaux 2014; Margot 2014; Ribaux 2016; Delémont/Tanner 2015; Le Blanc/Cusson 2010; Neubacher 2017; Ackermann et al. 2019).

- ▶ Criminal science(s) is a collective term (and not an independent science) that covers all scientific disciplines that involve crime in any form. That is why this term is also mostly used in the plural. In the German-speaking countries, a distinction is made between the legal (e.g. criminal law) and non-legal (e.g. criminalistics, forensic science, criminology) criminal sciences.

- ▶ Criminology is the science of the characteristics, causes and forms of appearance of the phenomenon of crime, in particular with regard to the behaviour of people involved in a crime, whether victims, perpetrators, investigators or members of the judiciary.

Although criminology is often viewed as a tool of criminal law, it is an independent science that stands at the interface of social, natural and legal sciences and pursues interdisciplinary approaches to defining, understanding and, ideally, preventing crime.

- ▶ *Kriminalistik* in its German form is a science that concentrates on the criminality and defines the means and methods that can serve to investigate, fight and solve crime. Criminal tactics, criminal strategy and *Kriminaltechnik* are sub-areas of "*Kriminalistik*", which is mainly considered as the science of the police. For this reason, "*Kriminalisten*" (criminalists) are mainly police officers in German-speaking countries.

- ▶ Forensic science (singular!) is defined as the science of the trace. All methods, techniques and processes that can be

used to search, collect, analyse and evaluate traces are therefore sub-areas of forensic science. It is used for police purposes. However, as forensic science focuses on traces in general (i.e. traces that arise from an activity that is of interest but not necessarily criminal in nature), it also develops in non-police units. “Forensic intelligence”², for example, is a sub-area of forensic science that can be used very well outside the police environment. Forensic science is therefore also defined by its methods, which aim at identifying, extracting, evaluating, analysing as exhaustively as possible the information potential of the traces for policing, security and analyses-purposes.

A forensic scientist is therefore a “general practitioner” (and not a specialist), who can identify and secure any kind of traces in order to evaluate and communicate their information potential. He does not necessarily have to be a police officer, but would most probably work in a police setting. The importance of forensic science as an independent science – and the position of forensic scientist – is still not internationally recognised, especially not in the German-speaking countries, where forensic science is still often seen as being a patchwork of disciplines. This term is therefore often used in the plural form (the forensic sciences). However, the plural form has another meaning (see below).

- ▶ The forensic sciences (plural!) is a collective term for all sciences that serve the administration of justice, but are themselves non-legal in nature. The etymology of the adjective “forensic” is based on the Latin word “forum”, which roughly translates as “marketplace”, as court proceedings and sentencing in ancient Rome were mostly carried out in

public on the marketplace. Amongst other things, this term covers criminology, Kriminalistik, forensic science, forensic medicine, forensic psychiatry, forensic anthropology, etc. and can therefore be viewed as a synonym for the non-legal criminal sciences. It should be noted that the difference between the terms “forensic science” and “forensic sciences” has primarily become established in Switzerland, Canada and Australia through publications of the University of Lausanne (see e.g. Roux et al. 2012). The difference is seldom perceived among English and German-speaking authors.

- ▶ “Kriminaltechnik” (no known translation in other languages) focuses on the search for and securing of traces at the crime scene and in the laboratory and in this regard is identical with forensic science. However, Kriminaltechnik is not considered an independent science, as it is used solely to support the justice system within the scope of police investigations. It therefore focuses exclusively on the traces left behind by a criminal activity. As far as the authors are aware, a precise translation of this term does not exist in French and English.
- ▶ The term “police scientifique” (scientific police) is to be understood as a precursor to modern forensic science and was accorded the status of an independent science by Reiss. Its importance is associated with two primary tasks of the police: supporting the justice system and protecting public safety. When the “police scientifique” supports the justice system, its meaning coincides with that of “Kriminaltechnik”. However, when this term is used in the context of protecting public safety, additional aspects of forensic science can be associated with it (data analysis with regard to an unknown activity). Currently, the

Source: Girod-Frais

	Status	Main aims/ objects	Application
Criminal sciences incl. criminology, "Kriminalistik" and forensic science	Generic term	Criminality in general	Police/security Justice Research
Criminology	Independent science	The person with regard to criminality	Justice Research Police/security
"Kriminalistik"	Independent science	Investigating/fighting criminality in general	Police/security Justice Research
Forensic Science	Independent science	The trace and its potential to supply information about an unknown activity (whether criminal or not)	Data analysis Police/security Justice Research
Police scientifique (scientific police)	Precursor to and sub-area of forensic science	The trace and its potential to supply information about a specific criminal activity	Police/security Justice Applied research

Table 1: Summarised definitions of the main terms of this article based on their status, main aims/objects and/or applications.

French language therefore considers "police scientifique" to be a sub-area of forensic science.

- ▶ The "criminalistique", in its French definition, is used as a synonym for forensic science. It does not include the sub-areas of criminal tactics and criminal strategy and therefore does not have the same meaning as its German-language counterpart "Kriminalistik".

The main differences between these terms are to be found in their status, main aims/objects and/or applications. Nevertheless, it is apparent that these definitions overlap and that it is even difficult to establish a certain hierarchy between these terms. Therefore, in order to ensure better understanding and for the purpose of simplification, this article employs five of the terms defined above, whose primary meaning has been summarised in Table 1.

To conclude this introduction, it should be noted that not all historical, linguistic and cultural parameters that enable a precise determination of a term have been considered in the definitions given above,

as the goal was only to clarify the most commonly used designations and to explain their meaning within the scope of this article. Furthermore, the above list is probably not exhaustive and it would certainly be interesting to consider the definitions of other terms that refer to the area of the criminal sciences (e.g. "police science", see Kersten 2012). However, this would require further research/investigations that go beyond the scope of this article.

2. THE LIFE OF RUDOLF A. REISS

Based on the definitions provided in the introduction, Reiss was a pioneer in the field of forensic science (even if this term did not exist at the time), as he always endeavoured to evaluate traces, but not necessarily for police purposes. Nevertheless, in Austria, as well as in Germany, he has remained virtually unknown. In order to make Reiss and his merits better known in the German-speaking countries, the following paragraphs will focus on his life, based on the publications of one of the authors (Kappler 2019a; id. 2019b) and other scientists (Mathyer 2000; Margot 2010; Quinche 2014).

Source: Mathyer 2000, 41



Figure 1: Rudolf A. Reiss (1875–1929)

Reiss (see Figure 1) was born on 8 July 1875, the eighth of ten children of a prosperous landowner in the Grand Duchy of Baden in Germany. Although he almost certainly never had to go without, he later himself said that he often felt abandoned and alone. That might well have been a reason for his deciding to move to Lausanne in Switzerland to study after leaving school. Reiss embarked on a degree in chemistry at Lausanne University, which he completed successfully in 1898 with the title of doctor. It was during his time at university that he also discovered his passion for photography, which was to accompany him for the rest of his life. He became a member of the still young Photo Club and also successfully participated in various international competitions for amateur photography. After completing his degree, he accepted the position of assistant to his doctoral supervisor, but just one year later (1899) he had already been appointed head of the as yet non-existent

university photographic service. Apart from founding and heading up various photographic specialised journals, Reiss travelled to Paris to continue his training there under one of the best known criminal scientists (more precisely: criminalists) of the age, namely Alphonse Bertillon, the head of the police records department.

He familiarised himself with all the techniques of modern crime fighting and investigation, especially in the area of identifying people. He learned everything about the so-called “Bertillonage”, an anthropometric system invented by Bertillon for identifying people on the basis of body measurements (Reiss 1905). He finally returned to Lausanne with a diploma in descriptive signaletic.

Reiss was keen to share his newly acquired knowledge with his students right away. He was able to achieve that his existing courses in theoretical and practical photography, which he offered in the law faculty at the University of Lausanne, were expanded. His new lecture on scientific and legal photography was the first of its kind at an academical level. In 1903, his request to be appointed private lecturer for photochemistry was also finally granted. The fact that he obtained the Swiss citizenship in 1901 and did not ask for any pay increase may have contributed to this decision.

In the same year, Reiss also published his first book, which was entitled “La photographie judiciaire” and dedicated to his Parisian instructor Alphonse Bertillon. In 1906, Reiss was made Associate Professor for Scientific Police Photography. Another three years later, in 1909, Reiss finally managed to found his own institute of police science, the “Institut de police scientifique”, after overcoming some intense resistance within the university.

He thus fulfilled one of his greatest wishes: from then on, this institute was the

first in the world at a university where it was possible to obtain a degree in “scientific police”. Through his many years of commitment, he had therefore managed to liberate the “police scientifique” – the precursor to modern forensic science – from its shadowy existence as a marginal discipline.

Reiss was also a very active specialised author, writing numerous articles and publishing several books. It was extremely important to him to spread his specialised knowledge and thus make it accessible to a large group of interested people. That was also how he met Edmond Locard, a French physician and lawyer, also dubbed the “Sherlock Holmes of France”. Locard played an outstanding role in the international further development of modern forensic science, in particular in the field of trace enhancement, and formulated future basic principles of forensic science such as, for example, Locard’s Exchange Principle (“Each contact leaves a trace”). Locard established the police laboratory of Lyon and became a good friend of Reiss thanks to geographical proximity and their similar way of thinking.

The publications of Reiss appeared in a wide range of specialised journals and magazines. Particularly worth mentioning at this point is that at least two of his articles appeared in the “Archiv für Kriminologie” (Archive of Criminology) founded by Hans Gross (which at the time still went by the title “Archiv für Kriminal-Anthropologie und Kriminalistik” (Archive for Criminal Anthropology and Criminalistics)³. The “Manuel de police scientifique” published in 1911 also deserves special mention (Reiss 1911), as it brought him considerable recognition outside the country.

Rudolf A. Reiss was soon a sought-after speaker at various conferences.

Furthermore, he also trained police officers, not only in Switzerland, but also

in St. Petersburg, New York and São Paulo. When the First World War broke out in 1914 and Reiss, an internationally acknowledged criminal scientist (forensic scientist), was asked by the Serbian government to document the war crimes of the Austro-Hungarian troops, he dedicated himself entirely to his new position as war correspondent and photographer.

Once the war was over, Reiss decided to remain in Serbia. He quit his job as head of the “Institut de police scientifique” in Lausanne and from then on dedicated himself fully to reorganising the Serbian police, advising the Serbian government and organising “pilgrimages” to the Serbian battlefields. After his death on 8 August 1929, Rudolf A. Reiss, one of Serbia’s great heroes, was given a state funeral in Belgrade. Numerous obituaries of him appeared both in Serbia and in Switzerland after his death. But nobody described him better than his friend and colleague Edmond Locard: “Reiss was a very great man, very young, very upright, robust, clean-shaven, energetic, with a look that could never be forgotten, so brightly did he shine with intelligence, finesse and clairvoyant irony. Reiss was Sherlock Holmes, more precisely realised than by Gémier [referred to here is the actor Firmin Gémier], because Reiss had not only the mask, but also the spirit of Sherlock Holmes” (translation into English of Champod et al., 2009).⁴

3. THE LIFE WORK OF RUDOLF A. REISS – THE PRECURSOR TO MODERN FORENSIC SCIENCE

Although Reiss decided to study chemistry after moving to Switzerland, his interests, as already mentioned, were wide-ranging.

His position as head of the university photographic service and his involvement in various photographic journals finally enabled him to combine his two passions –

Source: Reiss 1903

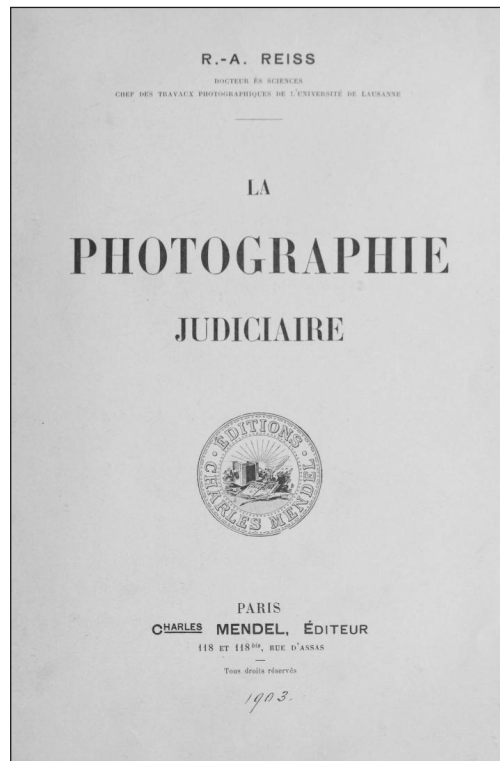


Figure 2: “La photographie judiciaire” (cover page)

photography and forensic science – in his life’s work. Most noticeable is that his published articles were mainly about the forensic application of photography. After his time with Bertillon in Paris, where he dealt with “Bertillonage”, amongst other things, Reiss was finally more convinced than ever that photography had a central role to play in the area of the criminal sciences. To quote Locard again, “Each contact leaves a trace”; this is exactly the reason why photography is so important for any investigation and for general forensic purposes.

Because, according to Reiss, “the camera is the recorder that sees and records everything” (translation into English of Champod et al., 2009). Reiss was therefore one of the first who recognised the importance of photography to police investigations, especially when searching for traces, and also had a big impact on its further development and increased use for the concrete

investigation of crimes, especially in Switzerland. His courses, which grew ever larger over time, undoubtedly contributed to this. In this regard, his work “La photographie judiciaire” (see Figure 2), in which he gave readers practical instructions alongside a number of theoretical considerations, should also be highlighted (Reiss 1903). In it, he paid particular attention to crime scene photography.

Reiss was totally convinced of photography’s usefulness in many different areas, as illustrated by following quote: “Although photography is still relatively young, it has very quickly succeeded in securing its place in a very large number of human activities due to its wonderful qualities. In fact, it is used by all arts and sciences for their development and research. It is, so to speak, the artificial memory of humankind and has become the automatic and non-partisan recording of events” (translation into English of Champod et al., 2009).⁵

In the area of “police scientifique”, photography became increasingly important, as it was able to precisely document traces. Moreover, Reiss was convinced that the information potential of the traces could only be exhausted if every detail, no matter how small, was carefully photographed, collected and analysed. In particular, his way of dealing with shoemarks should be briefly addressed here.

Shoemarks were, and still are, an important trace for the investigators because much can be learned from them, such as the direction from which the protagonists approached and left an activity to be investigated and where they moved around at the scene (of the crime). In this regard, Reiss went one step further by wanting to get even more information from shoemarks: “Shoemarks can give us e.g. information about the social standing of the individual that left them behind. The farmer wears

different shoes than the urban dweller, than the tramp from the wealthy barber. The shoe fitting is also important to establish the identity of the person who left the shoemarks found at the crime scene.

The fitting of the Italian worker's shoe in the Neapolitan style is quite different from the nails on the soles of the wooden shoes worn by our farmers in Vaud." (see Figure 3) (translation into English of Champod et al., 2009).⁶ As the above quote shows, Reiss wanted to draw conclusions from every detail, no matter how small. In doing so, he tried to remain as objective as possible and to explain his thoughts in a precise and logically comprehensible way. This highly distinctive objectivity, precision and logic were very well illustrated in his publications, in particular in his book "Le manuel de police scientifique" (Reiss 1911). This book quickly became a standard work and essential reading for everyone who wanted to work and do research in the field of the "police scientifique".

When it comes to describing Reiss' life's work, it would be unsound not to mention the countless expert reports he wrote. Between 1904 and 1919 alone, he authored 737 expert reports for the Justice of the Canton Vaud (Bochsler 2017). He also played an active role in the founding of international organisations. In this regard, particular mention should be made of the idea to create an international police authority, which was proposed during the international police congress in Monaco in 1914 and strongly supported by Locard, Reiss and others. However, these discussions were stopped by the outbreak of the First World War. In 1923, the president of the Viennese police, Johann Schober, picked up this idea again and founded the so-called "International Criminal Police Organization" in Vienna. This laid the foundations for the development of INTERPOL.

However, Rudolf A. Reiss' greatest wish was always to institutionally consolidate the "police scientifique", in order to give it the status of an independent, academic discipline. He was finally to succeed in this with the founding of his own institute in 1909. He affiliated the "Institut de police scientifique", an institute of police science (now known as the "Ecole des Sciences Criminelles" – School for Criminal Sciences), to the legal sciences faculty of the University of Lausanne (Mathyer 2000; Margot 2010).

In order to understand Reiss' motivation and intention for founding this institute, one has to remember his atypical career and the definition of the term "police scientifique". Reiss went from chemistry and photography to creating technological innovations that are primarily put in the service of the police, justice system and security services in general, which is in line with the aforementioned main aims and applications of the "police

Source: Champod 2009, 61



Figure 3: Example of a shoe sole photograph taken by Reiss

scientifique”. Beyond that, thanks to his technical skills and knowledge of the natural sciences, he began to decode and reconstruct a large number of past activities (whether criminal or not) on the basis of their material anchoring (the traces) by considering as a whole the phenomenon with which the activity could be connected (Reiss 1911). The institute founded by Reiss was therefore built on what we would today call forensic principles, but at the same time also became the cradle for the academic development of applied criminology in Lausanne, as the investigation and understanding of criminal phenomena as a whole proved to be an important element of Reiss’ teaching.

Thus Reiss’ legacy to the institute became the origin of the “Ecole des Sciences Criminelles” in its present form, where forensic science, criminology and criminal law develop alongside each other to support interdisciplinary approaches. This configuration, which is unique in the world, strengthens the ties between these disciplines and thus promotes the creation of innovative methods and models for observing and interpreting a large number of forensic and criminological phenomena (Ribaux 2016).

The founding of the “Institut de police scientifique” and its forensic as well as interdisciplinary approaches are surely the best known and most recognised aspects of Reiss’ life’s work around the world. But how did his institute and teachings develop after his retirement and death? This will be explained in the next part of this essay.

4. PERPETUATION OF THE TEACHINGS OF RUDOLF A. REISS

Reiss’ “Institut de police scientifique” was (and is) the world’s first university institute at which the precursor to modern forensic science was taught and students were able to graduate with a “Diplôme d’études de

police scientifique”. It therefore rapidly developed into a place of pilgrimage for criminal scientists from around the world. Even after Reiss’s retirement in 1919, the institute was able to successfully continue (Margot 2010).

Reiss’ successor was Marc Bischoff (1893–1970), who had already worked for many years as Reiss’ assistant. The institute developed continuously under his leadership. He expanded the course offerings by, amongst other things, introducing criminological courses, and therefore renamed the institute the “Institut de police scientifique et de criminologie” in 1954.

From 1963, the institute’s destiny was guided by Jacques Mathyer (1920–2010). In between, there existed two different degrees, namely the “Diplôme en police scientifique et criminologie” and the “Diplôme en criminologie”. The graduate students were also able to continue their studies with a “Doctorat en police scientifique et criminologie”. Beyond that, the permanent tasks of the institute included (as they still do) research and teaching as well as the collaboration with the police, the courts and various authorities, for which expert reports were prepared.

From 1986 to 2014, Pierre Margot (*1950) headed up the institute and renamed it the “Ecole des Sciences Criminelles” (ESC) (School of Criminal Sciences), to which the areas of forensic science, criminology and criminal law belong. The number of students grew constantly under the leadership of Pierre Margot and his successor since 2015, Olivier Ribaux: from approx. five people per year in the 1960s, to around 300 people at the beginning of the 2000s (of which, however, only 10 to 15 % successfully complete the examinations at the end of the first year). Moreover, the range of courses was constantly expanded. Students at the ESC can currently obtain a Bachelor of Science in Forensic

Science (BSc, 180 ECTS, six semesters), five Masters (120 ECTS, four semesters) and two Philosophy Doctorates – PhD (ten semesters as a general rule). During the BSc, natural sciences are taught in the first year; in the second and third year, forensic science in theory and practice is taught exclusively, including crime scene investigation, analysis and evaluation of material traces in the laboratory (fingermarks, shoemarks, microtraces, DNA, documents and handwriting, etc.), photography, microscopy, statistics and probability calculations (Bayes' theorem).

During the MSc, sub-areas of forensic science and/or criminology are explored in greater depth, both in theory and in practice. The following MSc courses are offered:

- ▶ Master of Science (MSc) in Forensic Science, Orientation Physical Identification: Focus on the material traces (e.g. fingermarks, DNA, shoemarks).
- ▶ MSc in Forensic Science, Orientation Chemical Criminalistics: Focus on the chemical traces (e.g. drugs, fire debris analysis).
- ▶ MSc in Forensic Science, Orientation Digital Investigation and Identification: Focus on the digital traces.
- ▶ MSc in Crime Data Analysis and Traceology: Focus on the evaluation of bulk data with regard to physical and digital traces.
- ▶ Master of Law (MLaw) in Criminology and Security: Focus on the criminological aspects of criminality.

The PhD involves detailed theoretical and practical work in the field of forensic science (PhD in Forensic Science) or criminology (PhD in Criminology), such as, for example, (Forensic Science): fingermarks dating, evaluating forensic traces with a likelihood ratio (LR), forensic intelligence, etc.

This variety and the importance of the ESC's⁷ degree programs are due to no one less than Reiss. But what about the practical application and the status of forensic science outside the ESC?

In Switzerland, many ESC graduates work in areas including the police, namely at the cantonal forensic services (crime scene unit and Kriminaltechnik) or the national police. The fact that academic forensic scientists are allowed to work with police officers at the crime scene and in the laboratory without being police officers themselves is unusual in Europe. However, this collaboration proved to be very positive as both groups are able to support and learn from each other: the forensic scientists have in-depth theoretical and practical knowledge in the area of securing and evaluating traces, and the police officers know the police operations and thus have a lot of practical experience regarding investigative methods, etc.

In Austria, however, the recognition of forensic science as an independent science is de facto non-existent. No Austrian university (of applied sciences) offers an in-depth (BSc, MSc and PhD) academic degree in forensic science that would be open to all graduates. In Austria, as in many other countries, forensic science is mainly viewed as a patchwork of disciplines. In the group of elective options called "Criminal law and criminal science" of the University of Vienna, some courses are offered with criminalistic and forensic contents, but these have mainly been conceived for students of legal and social sciences. Furthermore, the Medical University of Vienna offers a Master of Forensic Science (MFSc, 90 ECTS)⁸, although this has never been run and probably never will be. It has not been possible to ascertain a reason for this. In many countries, therefore, forensic training is primarily a police matter. In Austria, state forensic

units focused on crime scene investigation and traces analyses are mainly staffed by police officers. For this reason, we should actually not speak about “forensic units”, but of criminalistic or “kriminaltechnischen” units.

In most European countries, it is possible to observe a lack of academic forensic training, a fragmentation of the applied forensic science used and a somewhat conservative police structure, which is less receptive to scientific, interdisciplinary developments. Unfortunately, the fate of criminology in Europe is not much better either, as it is mainly viewed as an auxiliary science of criminal law and enjoys less and less recognition at universities, with few professorships and specific courses. Therefore, it would be (is) advantageous to encourage the collaboration between these two disciplines in order to re-establish their status, which would be favoured by a structure like that of the ESC. An example of this is the study into the phenomenon of digital criminality (Ribaux 2016). This phenomenon is currently being studied and handled mainly by IT-specialists, although they are not aware of the forensic and criminological aspects inherent to all criminal activities. Digital criminality also leaves behind traces that have to be identified, collected and evaluated in order to include the information obtained into a global process of understanding the criminal phenomenon that supports the development of the necessary tools for its evaluation, fight and prevention. This requires forensic and criminological concepts, methods and techniques. Digital criminality did not yet exist at the beginning of the 20th century, but Reiss’ approaches are still perfectly applicable to this type of activity, highlighting his futuristic vision.

5. CONCLUSION AND PERSPECTIVES

Reiss’ pioneering role regarding the evaluation of traces, his efforts to develop photography, his innovative approach to investigative work in general and the institutionalisation of the “police scientific” justify his reputation as the father of forensic science.

Thanks to the ESC, the Reiss’ vision was further developed by more precisely defining the role of forensic science and criminology in our society and highlighting the value of interdisciplinary approaches. However, this vision is not yet perceived by all players in the criminal justice system and other organisations active in the field of security. On the contrary, there tends to be some fragmentation of the forensic activities, which prevents an interdisciplinary enrichment and favours the “tunnel vision” of specialists, who have to work without context. On an international level, the lack of academic training in the field of forensic science – and thus the lack of “general forensic practitioners” – is also an indication for the lack of a forensic vision in actual structures. In particular, the de facto monopoly of the police in matters related to forensic science – regardless of whether in a narrower or broader sense – should be called into question. When it comes to criminal matters, the police should currently perform the operational activities at the crime scene and to a certain extent also in the laboratory; the police should also be responsible for communicating with the justice system and are to some extent also responsible for further development and research. How should this be possible in terms of financing, staffing and training? Forensic science is a basic and applied science just like medicine; close collaboration and good communication between (academic and applied) research and practice is therefore absolutely

necessary and should be supported by the entire system.

The following simplified descriptions are intended to illustrate the comparison between forensic science and medicine:

Medicine: The patient needs the medicine to become healthy. When an emergency happens, the paramedics take care of the patient first. Next, examinations and treatments are performed in hospital by specialist doctors. When the patient leaves hospital, he usually has a check-up with his general practitioner, who gives him a summary of his condition and explains his treatment, and may also plan the next visits. It is also important to mention the researchers in the field of medicine (specialist doctors) who develop new methods, treatments, etc. and mostly work in close contact with the specialists and to a certain extent also with the general practitioners. The patient therefore often has only a single point of contact, namely his general practitioner, who gives him all necessary explanations, and only rarely (never) has to speak with multiple people – paramedics, specialist doctors and researchers – to obtain the necessary information. The general practitioner knows the work of the paramedics and has the same basic training as the specialists and researchers, and can therefore function as a “translator” for the patient.

Forensic science: Legal experts need forensic science in order to be able to make a decision about a criminal action. When an “emergency” (criminal action) happens, mostly police officers (uniformed officers, investigators, crime scene officers) work at the crime scene for the legal expert in charge. The necessary analyses (e.g. of traces) are to some extent performed by police officers (crime scene officers, traces specialists) and to some extent by specialised experts (chemists, biologists, geneticists, engineers, etc.).

The responsible legal expert then receives information and expert reports from various police units and specialised experts who can provide explanations about their own work but not an overall overview. With regard to development and research, responsibility again lies with police officers and specialised experts as well as various other scientists. The former, however, are mostly without any scientific and the latter without any forensic and practical background. The legal expert thus has contact with several persons who are able to explain only a portion of the results and have fundamentally different backgrounds. Police officers, specialised experts, scientists and legal experts have to communicate about a case together, although they mostly speak very different languages. In most countries, the role of the general practitioner – that of translator – de facto does not exist in the field of forensic science.

To improve this situation, it is necessary to train “General Practitioners of Forensic Science”, who are able to link the different information by playing the role of “translator”. This is only possible through the worldwide development and recognition of academic and research programmes in the field of forensic science, as already perceived by Reiss.

The survival of Reiss’ institute for more than 110 years proves the relevance of his vision and teaching, despite the ongoing lack of recognition of forensic science around the world. The international fascination and interest that has been constantly shown in the ESC for more than a century, in the kind of hand-made original product that was manufactured outside the rules of large scale industry, therefore raises the hope that Reiss’ vision will prevail internationally.

¹ The statements contained express the personal opinion of the author and do not necessarily reflect the views of the Criminal Intelligence Service Austria.

² Sub-area of forensic science that deals with the structured collection and analysis of traces from repetitive activities (e.g. shoemarks in burglaries) (see, e.g., Ribaux/Talbot Wright 2014).

³ The change of name of this periodical is highly interesting and symptomatic of the lack of clear definitions in the German-speaking countries for the terms used in the disciplines of the criminal sciences. The periodical has not necessarily changed its focus over the years, at least there have been no official reports of this, but its name changed from Criminalistics to Criminology.

Were both terms viewed as synonyms? Or did criminalistics suffer such as massive decline in status after Gross that the periodical had to be renamed? Although a definitive answer cannot be given here, these questions emphasise the importance of using precise terminology.

⁴ Original quote: “Reiss [...] était un homme très grand, très jeune, très droit, d'apparence robuste, tout rasé, un air énergique, avec un regard qu'on n'oubliait plus, tant il y avait dans sa prunelle d'intelligence, de finesse et souvent de clairvoyante ironie. Reiss c'était Sherlock Holmes, plus exactement réalisé que par Gémier [referred to here is the actor Firmin Gémier], parce que Reiss n'en avait pas seulement le masque, mais l'esprit” (Champod et al. 2009).

⁵ Original quote: “La photographie, quoique relativement jeune encore, a su, en très peu de temps, par ses qualités merveilleuses, conquérir sa place dans un très grand nombre des branches de l'activité humaine. En effet, tous les arts et toutes les sciences l'utilisent pour leur perfectionnement et leurs recherches. Elle est devenue pour ainsi dire la mémoire artificielle de l'humanité et l'enregistreur automatique et impartial des événements” (Champod et al. 2009).

⁶ Original quote: “Les traces de pas peu vent nous indiquer, en outre, la position sociale de l'individu qui les a laissées. Le paysan est

autrement chaussé que le citoyen, le trimardeur porte d'autres ,ribouis” que le barbillon ,d'une marmite bien nippée”. Le ferrage des souliers a également son importance pour la détermination de l'identité de celui qui a produit les empreintes constatées sur les lieux. Le ferrage, à la napolitaine” des souliers des ouvriers italiens est tout différent de la disposition des clous ou des ,taches” des sabots de nos paysans vaudois” (Champod et al. 2009).

⁷ For further details on the ESC: <https://www.unil.ch/esc/fr/home.html>.

⁸ <https://www.meduniwien.ac.at/hp/postgraduate/universitaetslehrgaenge/masterstudienmscmph/forensischewissenschaften>.

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