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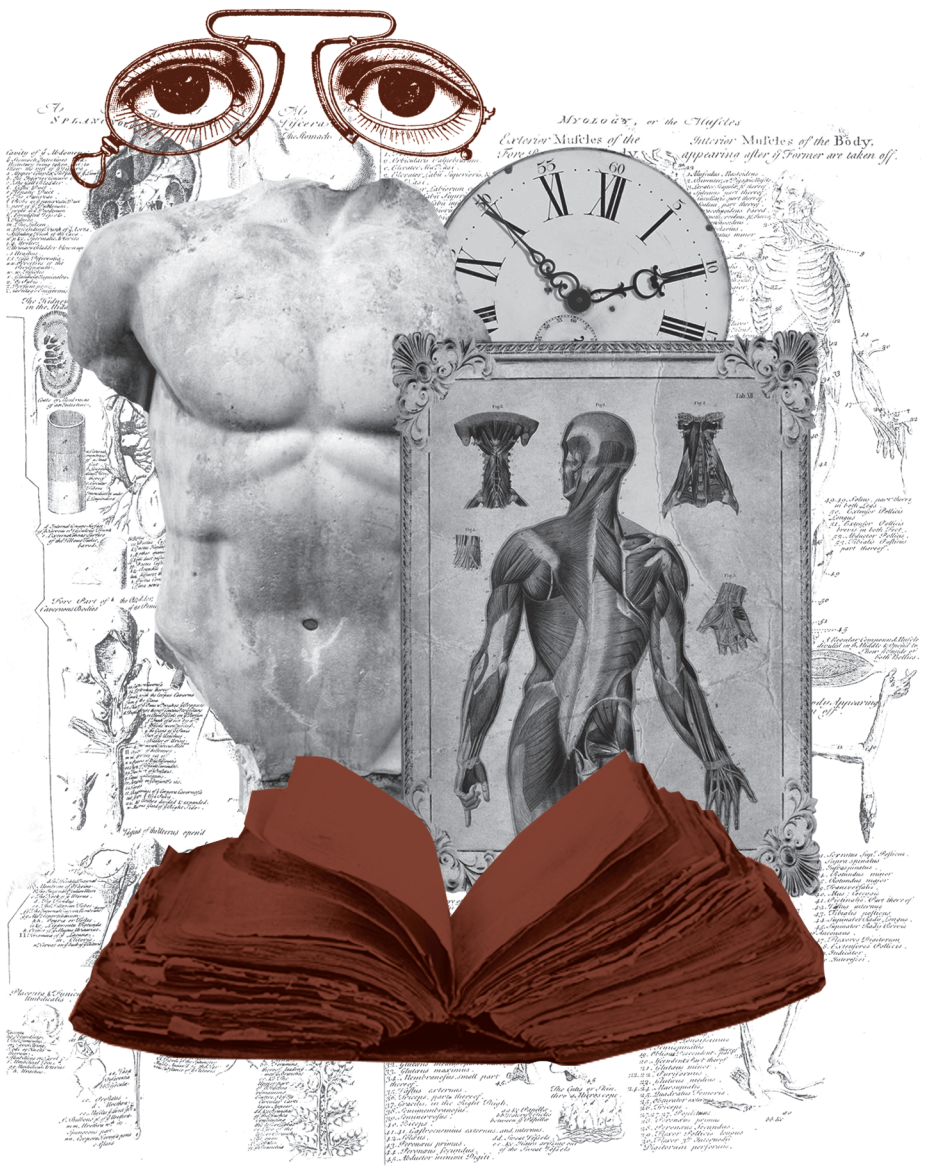
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FOREWORD TO THE NEW EDITION

It has been over a year since the first edition of my book was published. During that time, I have given many talks in several cities, given media interviews, and even been recognized in the street a few times (I am famous!). I have received over one hundred letters, both emails and handwritten, two of which invited me to join an organization to save the universe, the others simply expressing gratitude. I answered all of them, other than the two from another realm. It is nice when all kinds of people you do not even know like your work. That was a new feeling for me, something I was not used to. Before the first edition came out, I had no idea what kinds of things readers would share with me. I learned that many of them were really interested in finding out more about my specialty, that they were able to look beyond old prejudices, and some were even able to re-evaluate their lives. It would seem that my work was done. After all, the book came out, and people liked it. But, my dear readers, you have rightly pointed out to me that some things were missing from the book. I have tried to include them all here.

In this new edition, I will talk about the many types of tools we use at work. Each of them has a specific purpose. I will also talk about what we do in the lab, about exhumations, motorcycle injuries, dismemberment, and iatrogenesis, and, finally, about some of my favorite students.

Some chapters include case studies and quotes from real criminal cases.

I am always open to hearing from you. And I would be grateful if, after reading my book, you send me a few lines letting me know what you think. Email mossudmed@gmail.com or Instagram [@mossudmed](https://www.instagram.com/mossudmed).

INTRODUCTION

Once upon a time, when I was a boy, I saw the three-volume *Atlas of Human Anatomy*¹ by Raphael Sinelnikov at my parents' friends' house. I got carried away by the book and its realistic drawings and Latin inscriptions. I could not understand a thing, but the words sounded so mysterious and fascinating. I was too young to be thinking about a career in medicine, but I knew that I was deeply interested in the human body, and the way that every single detail has been designed so carefully.

Then I enrolled at the Omsk Medical Institute, which was renamed Omsk State Medical Academy just two years later (today, it is known as Omsk State Medical University). In Omsk (thanks, in part, to the excellent professors of the general anatomy department), I decided to specialize in this particular field of medicine. Even now, at Omsk State Medical University, there is an anatomical preparation* of upper extremity blood vessels and nerves in a formalin bath, prepared by me under the watchful eye of the admirable Professor Vladimir Rublev. After Omsk, fate took me to the challenging city of Chelyabinsk, where I completed my studies over the next four years, and where I delved into the most interesting topics, such as topographic anatomy and pathological anatomy. I also began specializing in forensic medicine there. In 1997, the Department of Forensic Medicine was a sad

* Anatomical preparations—natural or artificially prepared parts of the human or animal body.

sight, with boring classes and absolutely no scientific community. But we learned Vitaly Kryukov's textbook by heart, and by my fifth year, I knew what I wanted to do. I met Professor Pyotr Novikov, who only strengthened that decision. Then, I could not have imagined that I would one day be lucky enough to work in the same department as Professor Kryukov and so many other wonderful professionals whose books I read in medical school and as an intern. If someone had told me that one day I would rub shoulders with Evgeny Kildyushov, Evgeny Tuchik, Ivan Buromsky, Natalia Kachina, Yuri Solokhin, Natalia Selyutina, and Oleg Kriger, I would have never believed them.

But, as they say, man proposes, but God disposes. In 2006, I landed in Moscow, and I hope that is where I will stay. I work in the best forensic medical bureau in Russia—the Moscow Medical-Forensic Bureau. This bureau is Russia's most advanced forensic institution, with enormous labs, departments, and top professionals.

Over the last decade, so much has happened in my personal and professional life, but the one constant is that I have always studied. I have studied with people, some of whom are no longer with us, and I have studied books. I have a personal library of over one hundred forensic medical books, some of them dating back to the 1800s, and others are recent editions. Some of them have ink or pencil notes in the margins, left by their previous, nameless owners, and others have been restored. I have helped write a couple of them. To me, a book is always so much more than sheets of paper bound together.

And I had never thought that, one day, I would be asked to write a book of my own.

WHO IS THIS BOOK FOR?

It all began in 2011, when I discovered LiveJournal and created my own page, mossudmed.livejournal.com. At the time, I had been working as a medical examiner for about eleven years, and I had formed a set of views on human life, health, bad habits, and human vices.

I had decided that I would share my professional observations on LiveJournal, with occasional illustrations to help explain things. I did

not do anything to promote my blog, but over five years, its readership grew, and it is now consistently among the top ten blogs in the Moscow region, and the top twenty blogs in Russia.

The blog's popularity grew to the point that Alpina Publishing House's Deputy Editor-In-Chief, Irina Gusinskaya, approached me with an offer to write a book. Thanks to her incredible enthusiasm and support, my book became a reality.

Medical examiners work between the earthly realm and that which has yet to be. We have a front-row seat to the way people sometimes forget to value their present life or think about the future. Medical examiners get up close and personal with the destruction wrought by nicotine, drugs, and alcohol. Most people have no idea of what those poisons are capable of doing, and as a society, we often turn a blind eye to certain bad habits.

I would like that, after reading my book, people are able to take a step back and see themselves from the outside, and take care to avoid having a hand in reducing the time they have with us in this world. I hope that the information in this book will help my readers preserve their health, and the health of their loved ones.

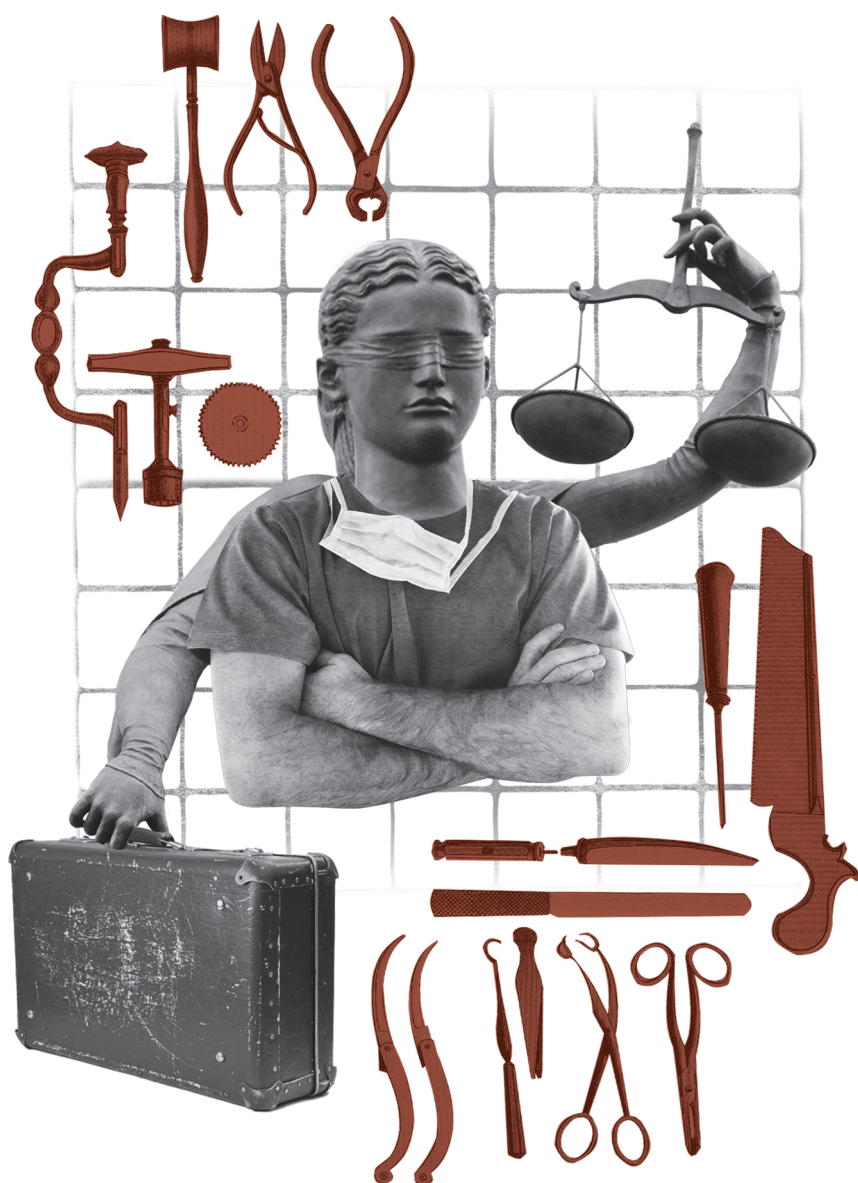
Though forensic medicine is not secretive, it remains a mystery for most laypeople, rife with all kinds of legends, preconceptions, delusions, and myths. As you read this book, you will understand what it really means to be a forensic examiner, and what our job entails. You will learn how forensic medicine differs from pathology, when and why an autopsy is necessary, what kinds of injuries can kill someone and what they look like, as well as many other aspects of my specialty.

It is not a scientific textbook, and it is intended primarily for people who have little to no background in medicine or, more specifically, forensic medicine. For that reason, I avoid any specialized jargon and dry facts and figures, and have attempted to describe pathological processes as simply as possible.

There is nothing fictional in this book. All of the stories described are actual cases from my own practice or were relayed to me by trusted colleagues.

PART ONE

LAYING THE GROUNDWORK



I. WHAT EXACTLY IS FORENSIC MEDICINE?

The answer to that question lies in the term “forensic medicine” itself. There are many definitions out there in all kinds of textbooks and manuals, but I personally prefer Professor Sapozhnikov’s rather short and sweet explanation: forensic medicine is “medicine in law.” Unlike in many other countries, in Russia forensic physicians are separate from the police and are not under their control, though they do work very closely together. Despite relatively bare-bones budgeting in forensic science departments (morgues are always funded on leftover scraps), this ensures that we remain independent—after all, that independence is the very foundation of forensic science in the first place.

Forensic science is not a new branch of medicine by any stretch. People everywhere have always wanted to know how their bodies work, how they get injured, and why people die. Written records dating back to antiquity and Mesopotamia mention doctors taking part in court proceedings. I would love nothing more than to have a time machine to go back and watch those trials and listen to what my ancient colleagues had to say.

A bit closer to our own era, we might look at early Germanic law from the fifth through the ninth centuries AD in northern Europe, or the Alemannic laws, which already included the concepts of “damage” and “severity of damage” to determine the amount of compensation to be paid to crime victims. That brings us to the medieval concept of “God’s judgment”—trial by ordeal—which took precedence over

any secular court, when whatever a doctor had to say was the least of anyone's concerns. Or we might learn how the first autopsy was allowed to take place in the French city of Montpellier during the fourteenth century.

Next came the *Constitutio Criminalis Carolina* under the Holy Roman Emperor Charles V, which especially recognized cases requiring medical expertise, or the work of Ambroise Paré and many other great thinkers, who laid the foundations for forensic medicine as a science.

In the late eighteenth and early nineteenth centuries, as the Inquisition was abolished, several European countries began holding open trials, which often required an expert physician to publicly substantiate and defend his conclusions. This greatly contributed to the forensic medicine's development as a science.

More specifically, what about Russia? Various elements of forensic medicine go back to the tenth century when courts considered a liability for "beatings," "desecration," and "fornication," among other crimes. By the eleventh and twelfth centuries AD, the legal code of Kievan Rus doled out punishments based on whether any bodily injuries sustained were "light" or "severe." At the same time, people began examining dead bodies, attempting to determine the cause of death. Several specialized institutions were created during the 1500s, including the Apothecary Chancery, which, among other things, was responsible for establishing health and sanitation conditions and examining the body of anyone who appeared to have suffered a sudden or violent death.

Here are two examples of how the Chancery worked.

Tsar Michael of Russia wished to marry a maiden named Maria Khlopova, but members of the court were against the marriage, and informed the Tsar that his intended suffered from "falling sickness" (epilepsy). When the Tsar learned that these rumors were likely untrue, he sent his fiancée to be examined by a commission including three doctors, a bishop, and several noblemen, who pronounced her in good health.

In 1677 the Apothecary Chancery ordered the examination of a clerk named Efim Bogdanovan to determine "what illness he had died

from.” Physicians found that “the illness Efim had was kidney stones, and one of those stones grew large, and as a result, death befell him.”²

Going to the doctor was a scary business during the sixteenth and seventeenth centuries, as remedies were often more dangerous than the disease itself. It was not unusual for doctors or other well-meaning but uninformed people to accidentally kill or harm their patients. There was the documented case of a doctor named Mikhail Tuleischik getting drunk and accidentally selling a patient highly toxic mercury chloride instead of medicine. And in 1700, a nobleman named Saltykov was poisoned when a servant named Aleksei Kamen mistakenly bought him the wrong herbs. All of this led to a pair of laws in 1686 and 1700, which would later become part of the *Complete Collection of Laws of the Russian Empire*, “On punishments for those who do not know medical science and due to their ignorance of medicine, cause their patients to die.” These were the first laws that considered any punishments for failed attempts to treat sick people.

And now we have arrived at the era of Peter the Great. Peter reformed just about everything he could possibly reform, and medicine, including forensic medicine, was no exception. His Article on Military and Naval Regulations touched on many aspects related to determining the severity of the injury and the cause of death. For example, the Naval Regulations (1720) included the following paragraphs:

“108. Whenever someone is killed in such a manner that he does not die immediately, but only sometime later, it is necessary to determine whether he died of that beating, or of some other disease. In order to do that, following his death, physicians must cut up the body and examine it for a cause of death, and submit a certificate of such to the court in writing, confirmed by an oath...”

“114. Should there be a brawl in which a number of people begin to beat one man, and he dies of a wound or fatal blow or many blows, it must be determined whether those who took part did so intentionally, and who delivered the fatal blow? If this cannot be determined,

the death shall be ruled accidental, and they shall be punished for the brawl.”³

The Naval Regulation included examinations to determine whether someone was faking an illness: “Determine whether they are truly ill, and if there is any false pretense, and issue a certificate.”⁴ By the sixteenth century, forensic medicine was already capable of answering many questions that are still under the scope of a medical examiner’s work, even today. Take, for example, this excerpt from the certificate of a forensic autopsy performed in 1731:

*The autopsy was carried out by doctors from the Medical Chancellery based on an Investigative Order to determine the cause of death of Major Apukhtin, who was found dead in a well at his home. The doctors were asked the following questions: (1) “Were they of the view that Apukhtin drowned himself in the well or was he poisoned?” (2) “Did the Major die a violent or natural death, or was it a case of suicide?” A complete examination of the body was conducted. The conclusion was as follows: “... All of the scratches on his body appeared to be from a tree, stone, or a fall... Based on this examination, it appears that the man drowned, which caused a lot of water to enter his stomach along with other damage, and he was neither murdered nor poisoned.”*⁵

Just like anything else in life, people have at times attempted to take advantage of forensic science, twisting it to try to suit their own political goals. During the late nineteenth century, the tsarist government opened the so-called Multan case, in which forensic doctors gave deliberately false conclusions.

“On May 5, 1892, in the village of Stary Multan in Vyatka Province, the headless corpse of the beggar Matyushin was found. Witnesses said he suffered from epilepsy. Following a forensic examination, which was not conducted until an entire month had gone by, the expert falsely concluded that Matyushin died from a cut to the neck. He attributed cuts on his lower legs to having been hung up to drain

his blood out, supposedly ‘as during a [ritual] sacrifice.’ Based on this, members of the Udmurt ethnic group were accused of killing the man. This conclusion, however, was later refuted by progressive Russian scientists Feodosiy Patenko and Emiliy Bellin. Bellin conducted a series of experiments and was able to prove that based on the absence of any blood on clothes or other signs of having bled to death, the head had been removed after he was already dead, to simulate a ritual killing. Following three hearings to consider this scientific examination, the Udmurt peasants were acquitted.”⁶

With time, forensic medicine has grown and developed. Thanks to new research, today, it includes a vast range of cutting-edge knowledge and technology, and is one of the most engaging fields of medicine. The Moscow Forensic-Medical Bureau boasts a highly developed scientific and practical infrastructure with leading experimentation and research. Medical students and those from other specialties work here, alongside numerous fascinating, creative people, including world-renowned scientists and young, innovative experts. Institutions carrying out their own “independent” examinations is a recent fad in Russia, which often gives people the false impression that these examinations are indeed independent, and that their conclusions are unbiased and objective. Alas, that is often not the case—and this is the reason why the independent status of state medical examiners is confirmed and enshrined in federal laws. State medical examiners’ salaries do not depend on the contents of their conclusions, and the positions of either party relative to a court case have no bearing on their work.

2. JUST WHO IS A MEDICAL EXAMINER?

Before writing this section, I asked my blog readers to describe to me what, in their minds, is a medical examiner's appearance. As I expected, most of the responses were heavily influenced by stereotypes they had seen on television and in movies. Movies avoid ever showing medical examiners' offices, and instead prefer the drama of a forensic dissection laboratory—where autopsies are performed on dead bodies. In movies, a medical examiner is almost always an aging man, unshaven, balding, and eccentric, with a sweaty face and a wrinkled white coat. He seems to work exclusively in dimly lit basements, with a messy desk covered in old newspapers and half-eaten food, an ashtray overflowing with cigarette butts, and with mysterious stains on the walls, desk, and his lab coat. The character himself is inevitably strange and constantly making deadpan jokes about his work. Rarely does he leave the laboratory, and when he does, he always manages to be casually chomping on a sandwich or a bag of chips, which he will offer to the investigator, only to be surprised when his offer is rejected. Often, he is portrayed as being a bit tipsy and, in older shows, almost always as a smoker. When the investigator asks for his conclusions, the medical examiner will, without fail, wipe his hands on his coat, whip out his notes, and say, in a weather announcer's voice, "Well, it is just as I suspected..." before once again offering the investigator a chip.

But there is yet a second type of medical examiner character in movies, which is quite the opposite to the first one. He is also invariably

a man, middle-aged, intelligent, always well-dressed, and he speaks in confident tones that assure you he knows absolutely everything about everything. He needs to establish the exact time of death—and he will, right down to the second. He needs to assess the damage—and he will do so methodically, as the picture of calm, without the slightest shred of doubt. For some reason, he does his job, as well as that of the criminal profiler, which has nothing to do with his position. Occasionally, this type of fictional medical examiner may be a woman—she will be efficient, with her hair in a messy bun, clicking around in high heels as she zeros in on the next task on her to-do list. Regardless of which type of medical examiner our screenwriters have chosen, they often mistakenly refer to the character as a “pathologist,” who also happens to take photos of the body at the crime scene, gathers fingerprints, and bags up pieces of evidence. Even more surprisingly, along with the investigators, the character will report on the investigation results to the police chain of command! This is what my readers had to say. Enjoy some of their submissions below:

“I always imagine a medical examiner as a middle-aged man, about fifty-five, and balding with gray hair. He is not married, and he does not have any children. He lives in a small, tiny apartment that belonged to his parents once, which is in shabby condition because his wages are pretty low. He is not very talkative, very calm, and does not have any hobbies because he is always working. He only has one or two friends, who are also doctors, probably people he went to school with. He usually watches television at home. He does not drink much, but he is a heavy smoker. At his age, he is disillusioned with life, has no more dreams or plans. Once he retires, he will continue living the same way he always has.”

“He is average height or a little shorter. He is slightly overweight and unshaven. He is always bald, with hairy arms. He has a bad temper, can be caustic toward others, and occasionally even rude. Many think he comes off as a know-it-all. But his friends love and respect him. Of course, he drinks on the weekends and holidays, but he judges others for losing control. He used to drink too much himself but has

managed to get his life together. He quit smoking, too. He has weird hobbies that have nothing to do with his job—like studying Esperanto. He is well read and educated.”

“He is a large, grouchy man. He hates other people, even despises them a little bit. He looks down on them, even if they are physically taller. He divides the world into red, black, and white, and there are no nuances as far as he is concerned. He could slaughter a pig with a nail file if he had to. He is unpretentious in his food, clothes, music, and movies. People around him do not necessarily respect him, but they are a little afraid of him.”

“He is thin, handsome, a ladies’ man, a reliable, ordinary guy. He did not start as a doctor, just working as an attendant at the morgue, where his uncle was a medical examiner and took him under his wing. So, after graduating medical school, he returned and never left. He was single for a while, then settled down, got married, had a kid, bought a house, and he has many friends he has known since they were kids... His wife is a good match for him. She is totally the life of the party, so he will never be bored or let his guard down.”

“I imagine him as a huge guy (at least six foot three inches, and 260 pounds), who works out at the gym, but he also has a real dark side. He spends a lot of time drinking alone, among the dead bodies, and thinks about the meaning of life and if any of them ever found it. He is lonely and has no family. If he has kids, their relationship is distant. His apartment is dusty, but he has a good stereo system. He listens to either classical music or death metal, no middle ground. He drives a black Cadillac coupe. And has a knife and scalpel collection hanging on the wall. He has a bunch of books about anatomy on the shelf, and a skeleton in the corner. Maybe it is holding a bottle of liquor and has a cigar in its mouth.”

“The medical examiner on TV is always a man. He is even-tempered, calm, attentive, careful, not particularly talkative, and often an introvert. He likes to be alone, and only talks to those close to him. He has friends, but just a couple of people (they are friends from school or college). He never talks about work at home or around his

friends. He likes reading, good movies, good food, or something creative. Sometimes, when he is in the mood, he might pick up some extreme hobbies—skydiving, for example, just to make himself feel alive. I do not know why, but I do not envision any significant others with him. Maybe there is a woman in his life, but she is not nearby. She comes and goes.”

“He’s a man between forty-five and sixty-five, with a beard, always standing in the background, a cynical joker, a bachelor, but he likes hitting on women all the time, especially at work. He drinks, but he is not an alcoholic. He might end up spending the night at work, taking his meals in his office.”

“Hmm... he is tall, thin, wearing unfashionable glasses, and really needs a haircut. He has a dog, and he is very detail-oriented, and notices imperfections right away, so it was hard for him to find a wife, and he just ended up single... But he is happy like that and sees nothing wrong with it. He sees every detail around him, but he is slobbish, his personal life is quite a mess, and he’s always losing his phone and gloves.”

“He is tired of his job and his low salary; he smokes and drinks because he knows it is a dead-end job.”

“He is cynical and sarcastic, with a lot of bad habits, so he looks older than he is. He has no fashion sense, and he lives alone or maybe even with his parents. He had a family once but got divorced because of his crazy work schedule at the morgue or maybe one of his bad habits. He is not athletic, but sometimes he tries to start living a healthy lifestyle. He spends way more time at work than at home. He’s loved by his friends and colleagues alike.”

“He is of average height, has a mustache. He is balding and a bit of a pervert.”

“If he is a man, he is over thirty, and if she is a woman, she is at least forty-five, because otherwise the family and kids would not let her spend extra time at work. Either way, they are a cynic. They like to relax away from other people in nature, and are particular

about drinking certain kinds of tea or coffee, or high-end alcohol and cigars. They are always obsessively washing their hands and cleaning off any surfaces and other things before using them.”

“He is a man. He is forty-five to fifty-five years old. He is either a bachelor, widowed, or divorced. He does not have any kids, or maybe he does, but they have grown up and moved out of the house. He is very detail-oriented, to the point of being a bit pedantic. Maybe he is quite a perfectionist. He is always neatly dressed but nothing flashy. He has a couple of old friends he is close with, but who he only talks to every two or three months. He has a dog at home, a mutt named Fido. He likes reading. He has a television, but he has not turned it on in four years. He would rather take his dog for a walk in the woods than spend time at a noisy party, assuming the weather is right. He doesn’t like people who are still alive because they make too much noise.”

Do you see a pattern? It is almost terrifying—a bald man with hairy arms in a wrinkled suit, with sad eyes, who is possibly a pervert. To a certain extent a mad scientist. Movies and television have clearly made their mark.

Let us start with the fact that in recent years many women have begun working as medical examiners. I think this is part of a growing trend in career choices, as women become more emancipated, and men are becoming gentler and more sensitive, and more likely to prefer another, purer field of medicine other than forensic science. Women work side by side with their male colleagues, and often they work even harder. After all, they are just as capable.

Certainly, there are some remarkably tall male medical examiners, and some of them do have hairy arms, but probably not to the point of scaring children away. Medical examiners are also just as likely as anyone else to lose their hair.

Unfortunately, some medical examiners do smoke but not all of them, and the number of those who do is shrinking with every year. The fantastical image of an expert who happens to be a functional alcoholic is also a far cry from reality. Once upon a time, it might

have been acceptable to drink in the workplace, but those days are long gone, and you will not find any drunk doctors or orderlies at the Moscow Forensic-Medical Bureau. Sixteen years ago, as an intern, from time to time, I did see a couple of the most intelligent, most competent and experienced experts step out of the forensic laboratory, make a beeline for the refrigerator, and take a few swigs of vodka. Unfortunately, most of these people have long since died, and those who have taken their place no longer behave like this.

In most cases, dingy basement laboratories are also a thing of the past. Employees at the Moscow Bureau enjoy brightly lit, sparkling offices on the third floor, a separate cafeteria, and strict sanitary and epidemiological regulations.

Medical examiners range from about twenty-four to seventy years of age. Just like any doctors, their chosen specialty is no accident. Occasionally, law students ask me, “Did it take long for you to get used to your job?” Medical examiners do not need to “get used” to their job any more than miners need to get used to working underground, cooks get used to working in a hot kitchen, or obstetricians get used to working on a maternity ward. By their third year, if not earlier, medical students already know if they are drawn to therapeutic or surgical specialties. To summarize, therapeutic specialties involve minimal blood, if any at all, while those who gravitate toward surgical fields can expect all kinds of blood and guts. Someone drawn to the therapeutic side of things will not specialize in surgery, and vice versa. No one is forced into any field. You definitely will not find young men and women beginning their internship in forensic medicine, only to suddenly be horrified upon learning—“Oh, heavens, we have to cut up bodies here!”—and running away screaming. Every student who chooses this or any other specialty is acutely aware of what they are getting themselves into.

Just like any other specialization, people choose forensic medicine because they are interested in it. Passion for your work means you are willing to overlook some of the negative aspects of your job and stay inspired enough to keep putting in long hours.

And, while it is true that sometimes our personal lives leave something to be desired, are medical examiners the only people who deal with this sort of problem?

3. PATHOLOGIST OR MEDICAL EXAMINER? WHAT IS SIMILAR, WHAT IS NOT

People, and sometimes even doctors, often use the terms “medical examiner” and “pathologist” interchangeably. If our colleagues have trouble telling us apart, how can we expect laypeople to manage this? At first glance, pathologists and medical examiners appear to be in the same line of work—but the differences between them are quite significant.

But first—the similarities. Both pathologists and medical examiners are doctors. They have both completed medical school before deciding to specialize in either pathology or forensic medicine. They both wear white coats, both work in a morgue, and they both examine dead bodies.

But that is where the similarities end. Pathologists work in a hospital and examine bodies at the request of the chief physician, who is their boss. Arthur Hailey did an excellent job capturing the relationship between pathologists and hospital staff in his book, *The Final Diagnosis*. Generally speaking, pathologists monitor treatments and diagnoses by examining the bodies of people who died in the hospital or of disease. For example, let us imagine someone who has a heart attack, known as an *acute myocardial infarction*. He is brought to the hospital in an ambulance, receives a diagnosis, and the doctors begin treating him. But sometimes, despite our most valiant efforts, people die. This is where the pathologist comes in to perform a postmortem exam to determine whether the doctors’ diagnosis and course of treatment were correct. The pathologist will look at the histology of a dead

body or examine biopsies from someone who is still alive. When performing an autopsy, he or she may choose not to examine the person's skull if there is no reason to do so.

Of course, pathologists do examine people who died at home, but only when they did so in front of witnesses (especially doctors), suffered from a long, chronic illness (confirmed by medical records), and the body did not present any sign of injury. In Russia, the number of people who die at home and are later examined by a pathologist varies among the regions—sometimes it is as high as eighty percent, and sometimes as low as ten percent.

The two most important words when describing the work of a pathologist are “disease” and “hospital.” Pathologists do not examine people who died a violent death. If during a postmortem examination a pathologist sees signs of violent death, he or she must: (1) immediately stop the autopsy; and (2) contact law enforcement agencies to send the body to a medical examiner.

It is necessary to distinguish what exactly constitutes a “violent death.” Most people assume that if someone is not found with an axe sticking out of their head, their death was not violent. In fact, things are not that simple. Any death that occurs due to factors in someone's external environment—cold temperatures, alcohol, carbon monoxide, or, yes, an axe wound—is considered violent. Intent does not matter here—if someone died from alcohol poisoning, whether he drank too much of his own free will, if someone poured vodka down his throat, or he drank it by accident is of little importance. In any case, the death will be considered violent.

In fact, only three types of death are considered *non-violent*: (1) death from disease (for example, our heart attack patient above, or someone who dies of pneumonia, a stroke, etc.); (2) death from old age (medical examiners will only see one of these cases every couple of years); and (3) death as the result of a stillbirth caused by congenital anomalies.

In short, pathologists do not examine violent deaths. That is the job of a medical examiner.

Medical examiners do not work in a hospital but in a specialized institution—in Russia's case, the Moscow Forensic-Medical Bureau.

Though their offices may happen to be located in a hospital, they do not answer to the chief physician, and only examine bodies when directed to do so by law enforcement agencies. There, they handle all violent deaths (murder, suicide, accidental); sudden or unexpected deaths; deaths with no witnesses or with undetermined causes; unidentified bodies; almost all deaths involving children; and so-called “medical cases.” The most important word that characterizes a medical examiner’s work is “independence.”

That independence is enshrined in the federal laws of the Russian Federation and numerous departmental regulations. Medical examiners do not answer to investigative authorities, the prosecution, or the defense, and they issue their conclusions based solely on their examination.

Each medical examiner must be criminally liable (!) for his or her conclusions—Article 307 of the Russian Criminal Code ensures this, and I hope that will remain the case. It is not the case for pathologists, as they are not performing medical examinations for the court.

So, what does this law mean, exactly? In short, it means that medical examiners cannot be pressured by anyone to change their conclusions, which are used as evidence in court. No department chief has the right to force any conclusions on his or her subordinates. In my sixteen years as a medical examiner, no one has ever attempted to “advise” me what to write in my reports.

Of course, that does not mean that medical examiners are immune from unscrupulous behaviors toward their duties, but every profession has its bad apples. People are only human, after all...

There are often rivalries and competition between pathologists and medical examiners, ranging from friendly to downright contemptuous. Pathologists sometimes claim that medical examiners’ work is just rough and approximate guesses, while theirs is a form of true art. And medical examiners in return shame pathologists for their reports, which are written based on the principle of “the shorter, the better.”

In reality, pathologists and medical examiners complement each other very well, especially if they have to share a morgue or even a forensic laboratory (which is reasonably common). We often help each other out and give each other advice, attend joint conferences

and meetings hosted by scientific associations, despite the differences between us.

Comparing pathologists and medical examiners is like comparing apples with oranges. Neither is more sound, and each simply has a different medical specialty with its specific tasks and goals.

4. TO CUT OR NOT TO CUT? THAT IS THE QUESTION

The vast majority of people have a contradictory reaction to the idea of being subjected to a postmortem forensic examination. They are horrified by the very idea of being moved around, “cut up,” “gutted like a fish,” or having their “organs taken apart.” Most of the time, the relatives of a deceased person feel the same way. It is perfectly understandable—there is nothing glamorous about a forensic examination, and the medical examiner certainly takes no pleasure in it.

Despite all the advancements of the twenty-first century, we still have no other way to determine someone’s cause of death. Sometimes, I am asked about virtual autopsies or why we cannot just use a CAT scan. In fact, that technology is sometimes used in Israel and Europe, but it has not entirely replaced the old-fashioned autopsy. While a CAT scan can show us things such as a broken bone, we will still have to cut the body in order to determine how it broke in the first place. And how else can we get samples of internal organs? Unfortunately, performing an autopsy is the only way to determine the exact cause of death, and to answer questions like when the person died, whether their injuries occurred while they were still alive and how they happened, and how likely it was that they were sustained in any given situation, etc. The relatives of the deceased need to understand that this is a necessary thing if they want to know how and why their loved one has died.

People's ideas of what happens at an autopsy are often founded on rumors, tall tales, and superficial knowledge of human anatomy (recently, some educated adults asked me, with straight faces, if a person's eyes fall out of their sockets when you remove the brain from their skull). It is natural, as the average person never needs to know this kind of information. But think of the movie *Flashdance*. We see the heroine working in a steel mill, holding her angle grinder in what has now become an iconic scene. We do not think about what went into that step in the process: how the blast furnace was designed or what sort of chemicals were added to the raw materials to make the steel. All we see is a steelworker on a hot factory floor, cutting metal. Scenes like this have come to symbolize steelworkers in our minds. Thus, when we think about surgery, we imagine a surgeon at an operating table under the harsh glow of the lamps overhead. We do not think about how the preparation for surgery began—many members of the medical staff also had a role to play in getting the patient ready; during the surgery, the surgeon is trying to anticipate any potential complications and how to avoid them. It is also how we tend to think about autopsies—we come up with a partial sketch based on stereotypes, and it is not a very pretty picture.

In fact, autopsies do not begin in a forensic laboratory but rather in the medical examiner's office, where he or she will complete the first step of reviewing any referring documents. Ideally, those documents will give the examiner a good idea of what may have happened to the person before he or she died—were they sick, did they take some sort of substance, were they beaten, was there anything suspicious about the place the body was found, etc.? That kind of information is vital for planning the next steps of the examination. Unfortunately, however, ideals are just that, and such detailed documentation is seldom encountered. Often, the information contained in the report is very scanty, if it even exists.

After the examiner has reviewed the documentation, he or she will move on to the next step—an external examination, followed by an internal one.

An external examination begins with a description of the clothes the person is wearing. If the deceased is unidentified, its description

must be very detailed—any ribbons, inscriptions, prints, fasteners, pockets and their contents, any seams on the clothing are closely examined. This level of detail is necessary, as clothes can be significant for identifying a body. Sometimes, items found in someone’s pockets or even the creases of their clothes will shed light on their lifestyle or health while they were alive—syringes, pills to treat various diseases, or sometimes even illegal drugs and narcotics. Any damage to the clothing or blood, vomit, semen, urine, or soil that might be on it is meticulously described and photographed. There have been cases when we were able to identify the perpetrator or the driver of a car that ran over a pedestrian simply by the foot or tire print left behind. Once the clothing has been examined, it is either returned to the deceased person’s relatives or sent to the investigator for more study.

The next step is a thorough description of the body and any features it may have—tattoos, piercings, teeth, scars, pigmentations—and, of course, any injuries. If the body is unidentified, the medical examiner will create a verbal portrait of the person, measuring the width of their hands and the length of their feet. It might seem like overkill, but it is most certainly not. After an unidentified person is buried at the government’s expense, the clothing, photographs, fingerprints, blood, and verbal portrait will remain behind for identification. That might happen in a month, or maybe in a year. Often, tattoos tell us a lot about a person’s life or profession. I have had cases where a body was identified by the address tattooed on the person’s chest. And I once examined a man who had a tattoo on his foot of a toe tag with the inscription “Hey, you at the morgue!” (Photo 1).



Photo 1

Here and elsewhere in the margins are QR-codes for the photographs. Warning! The publisher does not recommend this material for anyone of a sensitive disposition.

Only once the external examination is complete will we move on to the step most commonly associated with a medical examiner’s work—the autopsy. An internal examination must include three sections of the body—the cranial cavity, the chest cavity, and the abdominal cavity.

It is worth mentioning that any incisions made will be done with care not to be visible. For example, the incision on a person’s head is done close to the nape of their neck, and the skin is then peeled forward and back, the dura mater of the brain is removed, and then the brain itself. The chest and abdominal cavities are cut with a single

incision, and then, as a rule, the internal organs are removed all at once—from the tongue to the rectum. This is done because it preserves any anatomical links between the organs, and the doctor can see any injuries or pathological processes better. If necessary, the spine will be cut in order to examine the spinal cord, limbs, etc. Though medical examiners are not limited in the number of incisions they make or how deep or long they can be, or where, none of us will make an incision that will leave a visible mark on the body unless we truly have to. On the contrary, we strive to minimize any cuts we make. There are many ways to remove internal organs, and several of them involve just a tiny incision. In some cultures, young unmarried women are often buried in a wedding dress with a low neckline. In these cases, while performing the examination, the medical examiner will take pains to respect the family's wishes. After he or she has finished, all of the incisions will be sewn up, and sometimes padded with specific material so that no blood left in the girl's blood vessels will leak onto her clothes.

During an autopsy, examiners remove biological material from the body to carry out further studies. They nearly always take samples of blood, urine, and other biological fluids to detect any presence and concentration of alcohol; pieces of internal organs for microscopic examination; and sometimes entire organs (in cases of suspected poisoning, drowning, etc.) and bones and skin in cases of injury. In some cases, the police investigator will draw up a list of what needs to be taken, while in others, it is up to the medical examiner to decide. I think the fact that occasionally organs are removed for further lab study gives some people the idea that morgues are involved in the organ trade, which could not be further from the truth. But we will talk about that a little later on.

People who are not familiar with forensics often ask me: "What do you do with the organs when you are done with them?" Hundreds of times I have explained that all organs are considered to be part of the human body, and once we are done examining them, the majority are simply put back, with some exceptions when they are needed for additional study. After that, the orderly on duty will embalm the body or sew it up, clean it, and prepare it for burial. They will dress