CHAPTER 1

Small Arms Identification: An Introduction

Introduction

Arms and ammunition are evidence. Many weapons carry marks that, combined with their physical characteristics, reveal important information about them, including their manufacturer, age, and origin. This information, in turn, provides vital clues about the sources and flows of weapons in the area in which they were found.

Why is it important to accurately identify weapons and track arms flows? The illicit acquisition and use of small arms, light weapons, and their ammunition fuels conflict and, in post-conflict situations, allows ex-combatants to rearm for war or engage in criminal activity. Outside of conflict zones, illicit small arms enable violence and crimes, ranging from domestic violence to wildlife poaching and drug trafficking. While the type and level of violence committed with small arms and light weapons varies, no region of the world is entirely immune. The accurate identification of the types and sources of weapons used by criminals and combatants provides important insights into the dynamics and underlying causes of conflict and crime.

Knowledge of arms and ammunition also protects the reputation of journalists by preventing errors that reduce the credibility of their articles, and distract from their main message. For reporters who are working in the field, accurate identification of weapons and ammunition can be a matter of life and death: the improper handling of these items can lead to serious injury or worse.

Policy-makers and legislators also benefit from understanding how arms and ammunition function and are employed. Crafting and implementing effective policies for combatting terrorism, reducing crime, and preventing conflict require a nuanced understanding of weapons and their role in these and other societal problems. The ability to precisely and credibly discuss arms and ammunition also increases the credibility of policy-makers and the persuasiveness of their policy proposals.

The goal of this Handbook is to provide the reader with a basic understanding of how to identify and analyse small arms and light weapons, and to track their proliferation. The process of identifying arms is complex, and no single guide can provide all of the information required to identify every weapon or round of ammunition that may be encountered at crime scenes or in conflict zones. Instead, this guide explains the process by which weapons and ammunition are identi-

fied and arms flows are tracked. Reference material on specific small arms, light weapons, and ammunition is included throughout the guide. This material will help readers to take the steps necessary to identify the make and model of the most commonly encountered weapons and ammunition.

This chapter begins with a brief overview of key terms and definitions, including terms that are often used incorrectly. The chapter then presents and explains a system for classifying weapons and ammunition. The chapter concludes with an overview of the processes through which arms are identified and arms flows are mapped. Of particular importance is Table 1.3, which lists the tools and techniques for identifying and tracking weapons, and where to find descriptions of them in the Handbook.

Terms and definitions

The precise and consistent use of terminology is essential to the accurate identification and analysis of arms and ammunition. This applies not only to text but also to the use of images, video, and audio communications. The latter medium is especially imprecise and prone to error; it is possible for the listener to form a confident picture of the object being described, only to discover (when presented with an image) that it is something else entirely. The use of correct and consistent descriptors can mitigate this problem, and help ensure all correspondents are on the same proverbial page in subsequent discussions. It also allows for precise, concise, and meaningful reporting, which is as important in articles intended for lay readers as it is in publications for technical specialists.

Despite the many benefits of precise and accurate terminology, the erroneous use of terms related to weapons and ammunition is common. Some errors are so frequent that they have become colloquially 'correct' by virtue of popular usage. However, they remain technically incorrect and should be avoided. These errors include the misuse of terms such as 'AK-47', 'assault weapon', 'clip', and 'rocket-propelled grenade' (see Boxes 3.1, 3.2, 3.4, 5.2), 'high-powered' (a wholly relative term), and 'dum dum bullet'. Often, the term 'semi-automatic' is incorrectly used as a synonym for 'automatic'. Similarly, many people use the term 'bullet' when referring to a cartridge. There are also several terms whose specific legal definitions are very different from popular usage. A good example is the US government's

definition of 'machine gun', which includes all automatic weapons, even automatic pistols and shotguns, along with key components for these weapons.[1]

Government publications, technical manuals, national legislation, and multilateral instruments define 'small arms and light weapons' in various ways. The development of definitions in these different contexts, for different purposes, means that there is often inconsistency between them. In part to address this issue, some internationally-agreed definitions of 'small arms and light weapons' have been developed. Within the framework of the UN small arms process, the International Tracing Instrument (ITI) provides an authoritative definition of the term, applicable to all UN member states:

> For the purposes of this instrument, 'small arms and light weapons' will mean any man-portable lethal weapon that expels or launches, is designed to expel or launch, or may be readily converted to expel or launch a shot, bullet or projectile by the action of an explosive, excluding antique small arms and light weapons or their replicas. Antique small arms and light weapons and their replicas will be defined in accordance with domestic law. In no case will antique small arms and light weapons include those manufactured after 1899:
>
> (a) 'Small arms' are, broadly speaking, weapons designed for individual use. They include, inter alia, revolvers and self-loading pistols, rifles and carbines, sub-machine guns, assault rifles, and light machine guns;
>
> (b) 'Light weapons' are, broadly speaking, weapons designed for use by two or three persons serving as a crew, although some may be carried and used by a single person. They include, inter alia, heavy machine guns, hand-held under-barrel and mounted grenade launchers, portable anti-aircraft guns, portable anti-tank guns, recoilless rifles, portable launchers of anti-tank missile and rocket systems, portable launchers of anti-aircraft missile systems, and mortars of a calibre of less than 100 millimetres. (UNGA, 2005, para. 4)

For its more technical definitions, in particular those for specific small arm and light weapon types, this Handbook relies on definitions developed by Armament Research Services (ARES).[2]

1 See GPO (n.d., para. 5845(b)).

2 See ARES (2017) and ARES (forthcoming).

For the purposes of this Handbook, a 'small arm' is defined as a firearm of less than 20 mm in calibre that, with its ammunition, may be transported and operated by a single individual on foot (ARES, 2017).

The calibre limit of 20 mm is a useful cut-off for 'small arms' since it includes most modern firearms. It includes, for example, firearms that are chambered for common 12.7 mm rifle cartridges, as well as common 12 gauge (18.5 mm) and 10 gauge (19.7 mm) shotgun calibres. While there are some historical and contemporary examples of rifles and shotguns chambered for calibres larger than 20 mm, their numbers are limited and they are unlikely to be encountered in the field.[3] The Handbook also covers some types of small arms not listed in sub-paragraph 4 (a) of the ITI definition, such as shotguns.

For the purposes of this Handbook, a 'light weapon' is defined as a lethal weapon or weapons system which may be transported (with its ammunition and any essential components) and operated by a crew of as many as five individuals on foot.[4] The Handbook also limits light weapons to systems weighing 300 kg or less when in firing configuration (not including ammunition weight) (ARES, 2017).

Unlike the category of 'small arms', which consists entirely of firearms, the term 'light weapons' covers a variety of weapon systems employing different operating principles. Definitions for these weapons are typically based on the calibre, diameter, or length of the relevant system—or its ammunition (ARES, 2017). It is also important to note that improvised and craft-produced light weapons sometimes differ significantly from their industrially-produced equivalents (Hays and Jenzen-Jones, 2018). The definitions provided above nevertheless attempt to account for such differences, when possible.

3 These include large-bore rifles used to hunt dangerous game, particularly in the late 19th century, such as 4-bore (26.7 mm) and even 2-bore (33.7 mm) designs (Brander, 1988). While largely obsolete, limited numbers of modern guns are produced in these calibres. See, for example, Schroeder and Hetzendorfer (n.d.).

4 While there is no readily-accepted understanding of *how much* ammunition must be carried, it is understood that even a light combat load for some weapon systems will constitute a substantial burden in terms of volume and weight. At a minimum, this figure should include a full weapon load of ammunition (for example, an entire magazine, complement of rockets, etc.) and, in the case of weapons typically reloaded under combat conditions, one full reload of the same number of rounds. 'Essential components' means those components that are required for the weapon to function.

Classifying and identifying arms and ammunition

Accurate classification and identification of arms and ammunition is the cornerstone of researching and reporting on illicit small arms and light weapons. Individual items of interest are identified on the basis of their physical characteristics—such as barrel length—and the markings present on the item. The amount and type of available information and the skill level of the researcher will determine the detail and accuracy of a classification or identification.

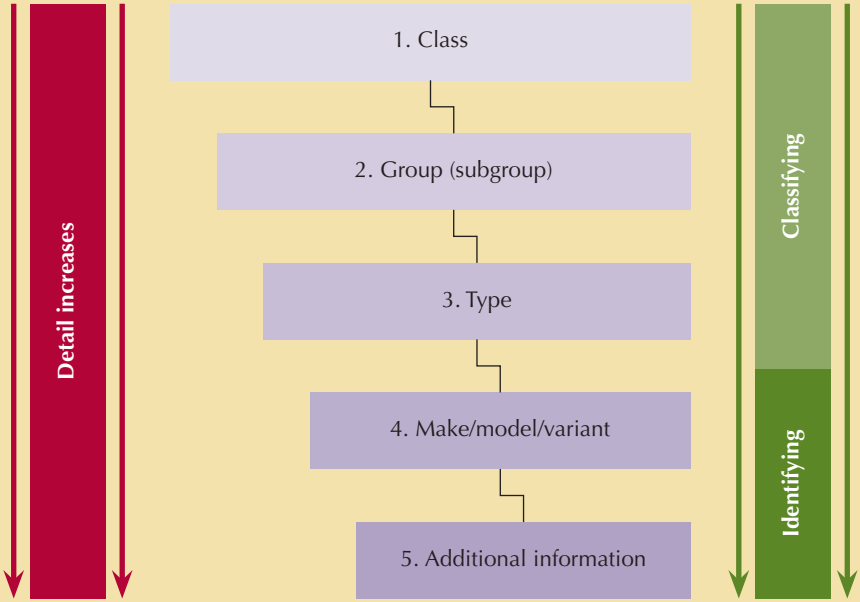
The ARES Arms & Munitions Classification System (ARCS) allows for the classification of arms and ammunition at various levels, as described below and outlined in Figure 1.1 (ARES, forthcoming).[5] Some researchers may have as their primary goal the *classification* of arms and ammunition: that is, determining the class, group or subgroup, and type of the item in question. Other research requires the precise *identification* of the item: that is, positively determining, at a minimum, the item's make and/or its model. It is important to note that the identification process does not necessarily proceed according to the hierarchy of classification. It is not always necessary to know the operating system, for example, to identify a weapon's manufacturer or model. Sometimes the fastest way to identify a weapon is by looking at distinctive features or markings, such as markings that denote the make and model (which are sometimes very clear). Once the make and model are confirmed, the weapon's group, type, and other information are often easily identified.

The identification process for a practitioner with access to the weapon in question—or detailed photographs—would assess the physical features and markings on the item and may proceed as follows:

1. Determine the class.
2. Determine the make and model (and variant, if applicable) if possible.
3. Determine the type if make and model cannot be determined.
4. Determine the group if type cannot be determined.
5. Continue to refine as necessary until the make and model is identified (or the item has been uniquely identified) or no further progress is possible.

5 The definitions used in ARCS were developed by an ARES team consisting of Jonathan Ferguson, N.R. Jenzen-Jones, Ian McCollum, and Anthony G. Williams, and were reviewed by numerous external specialists.

Figure 1.1 The different levels of ARCS classification fidelity



Source: ARES (forthcoming)

Figure 1.2 provides a sample description of a weapon following the ARCS methodology.

Level 1: Class

Conventional arms are typically divided into three classes: small arms, light weapons, and heavy weapons. The first two classes are the focus of this guide. Munitions (including ammunition for small arms and light weapons) are often classified based on the domain from which they are employed: land, air, and sea or subsea.[6] Distinctions at this level for ammunition are less useful than for arms, with the primary distinctions for small arms and light weapons ammunition occurring at the group level (ARES, forthcoming).

6 In the context of this Handbook, the term 'munition' is used in the US military sense to mean 'a complete device charged with explosives; propellants; pyrotechnics; initiating composition; or chemical, biological, radiological, or nuclear material for use in operations including demolitions' and includes all small arms and light weapons ammunition (US DoD, 2018, p.158).

Figure 1.2 Description of a weapon using ARCS

Class	Small arms
Group	Long guns (self-loading rifles)
Type	Self-loading (automatic) [short-stroke gas-operated piston]
Make/Manufacturer	FN Herstal
Model	SCAR-L
Variant	CQC
Calibre	5.56 × 45 mm
Additional Information	
Year of manufacture	2004
Serial number	L014466
Country of manufacture	Belgium
PID (positive identification by make and model)	Belgian FN Herstal SCAR-L CQC 5.56 × 45 mm self-loading rifle
UID (unique identifier)	L014466 (serial number)

Image source: N.R. Jenzen-Jones/ARES

Table 1.1 Common small arms groups and subgroups

Hand guns			
Rifled			Smooth-bore
Self-loading pistols	Revolvers	Other manually-operated handguns	Smooth-bore handguns

Long guns						
Rifled				Smooth-bore		
Sub-machine guns	Machine guns	Self-loading rifles	Manually-operated rifles	Self-loading shotguns	Manually-operated shotguns	Other smooth-bore long guns

Source: ARES (forthcoming)

Level 2: Group

Within each class, arms are separated into broad groups. Categorization by group is often possible through a simple visual examination of the item's physical characteristics. To aid in the identification and classification process, small arms are first grouped into 'long guns' and 'hand guns'. For small arms, another key distinction at the group level is whether the weapon is rifled. Researchers often correctly assume the weapon is rifled during this step, as most modern firearms are rifles and most unrifled ('smooth-bore') firearms in circulation are distinctive (ARES, forthcoming). Weapons may also be classified into smaller subgroups. Classification at the subgroup level includes an assessment of the general type of operating system of a weapon, but not the specific mechanical action, which is relevant at the next level (see Table 1.1). A close inspection of smaller physical details and markings is usually not necessary at this level. The equivalent grouping for light weapons is their separation into 'hand-held' and 'crew-served' weapons.

Munitions are also divided into broad groups based upon general physical and mechanical characteristics (see Table 1.2). According to this system, almost all small arms ammunition—that is, projectile ammunition of less than 20 mm in calibre—is classified in the same subgroup: 'small-calibre ammunition', under the 'projectiles' group.[7] Light weapons, using a variety of operating systems and

7 The exceptions to this are very few, and consist mostly of novel designs such as miniature rockets. These types are almost never encountered in the field.

Table 1.2 Common munitions groups and subgroups (land)

Projectiles				Powered munitions			Thrown munitions	
Ammunition (calibre)			Other	Rockets	Guided missiles	Other	Hand grenades	Other
Small	Medium	Large						

Emplaced munitions			Submunitions	
Landmines	Improvised explosive devices	Other	Unpowered (free-fall)	Powered

Source: ARES (forthcoming)

ammunition types, are somewhat more complicated, but all light weapons ammunition will fall under the 'projectiles' and 'powered munitions' groups shown in Table 1.2.[8] Most cartridge-based ammunition for light weapons will be classified under the 'medium-calibre cartridges' subgroup (at least 20 mm, but less than 57 mm in diameter) or the 'large-calibre ammunition' subgroup (57 mm or greater in calibre) (ARES, 2017; forthcoming). Light cannon and grenade launchers, for example, generally use medium-calibre ammunition, while recoilless weapons and mortars generally use large-calibre ammunition. Guided missiles and rockets of any size have their own subgroups, under the 'powered munitions' group. The groups 'thrown munitions', 'emplaced munitions', and 'submunitions' are not relevant to small arms or light weapons, but are shown in Table 1.2 for context (ARES, forthcoming).

Level 3: Type

The third level of classification for small arms and light weapons is based on the weapon's operating system. The operating system, or 'action', of a weapon describes how it performs its firing functions. Operating systems, which may be implicitly or explicitly given at the subgroup level,[9] are refined and formalized at

8 There are a small number of light weapons capable of firing ammunition which contains submunitions. Submunitions are classified separately to the 'parent' munition(s) under ARCS (ARES, forthcoming).

9 An example of an implicitly given operating system is 'machine guns', as these weapons, by definition, make use of an automatic, self-loading action. The subgroup name may at other times explicitly include an operating system descriptor, for example 'self-loading rifles'.

the type level into both generalized categories (for example, 'manually-operated', 'self-loading') and more specific subtypes ('bolt-action', 'automatic'), as well as mechanical action descriptors ('blowback', 'long-stroke gas-operated piston').

Ammunition is distinguished by functional type—that is, a short description of the effect and often, by extension, the intended role of a given item (for example, 'high-explosive fragmentation' or 'armour-piercing'). Functional types may also be categorized according to broad meta-types (for example, 'anti-armour') and narrower subtypes (for example, 'armour-piercing fin-stabilized discarding sabot').

Level 4: Make, manufacturer, model, and variant

Determining the model of an item is perhaps the most common goal for those engaged in the identification of small arms and light weapons. An item's model is sometimes described in general terms (for example, 'an AK-type self-loading rifle', denoting weapons using an Avtomat Kalashnikova-type operating mechanism and general configuration), or in more specific terms ('AKM-pattern self-loading rifle', which may apply to weapons that are close copies of a specific model, the Avtomat Kalashnikova Modernizirovannyy). Ideally, researchers will determine the precise model of the weapon; to do so they need to identify the weapon's make ('IZHMASH AKM self-loading rifle'). A simple way to conceive of a weapon's 'make' is to think of it like a brand. It is often marked on a weapon.[10] When make (and/or manufacturer) and model are known, the researcher will have achieved a positive identification of the item. Once they have a positive identification, they will also know the calibre.[11]

The identification of a particular model may be further narrowed by the identification of a variant, if applicable. For example, the AK-103 self-loading rifle that will be discussed in Chapter 7 was identified as an AK-103-2 variant based on the weapon's action and specific markings on the firearm (Jenzen-Jones, 2016c).

10 The make is distinct from the manufacturer, in that some manufacturers may produce more than one brand of weapon at the same factory. Other makes of weapons will be produced in different factories, despite sharing a 'brand' (ARES, forthcoming). See Chapter 3 for more details.

11 While some manufacturers may consider weapons of the same model in different calibres to be 'variants', ARCS considers calibre to be integral to the model of the weapon. Some weapons may be multi-calibre types (for example, modular weapons; see Ferguson, Jenzen-Jones and McCollum (2014); Persi Paoli (2015)), but should generally be documented in the configuration in which they are recovered or observed (ARES, forthcoming).

Level 5: Additional information

Some types of investigations demand additional information. For example, tracing operations frequently require the unique identifying mark on a particular item.[12] This mark may be unique to a particular item (such as a serial number), or to a group of items (for example, a 'lot' or 'batch' number). Unique identification (UID) has been achieved once a researcher has correctly identified and recorded such markings. Other data, such as explosive fill, fuse type, year or date of production, is also often useful. Researchers sometimes gather even more detailed data, including forensic evidence, in the course of investigations.

Identifying weapons and analysing arms flows: an overview

This section provides a step-by-step overview of the processes by which weapons are identified and arms flows are tracked. The process consists of two distinct but interconnected tasks: identifying individual weapons and tracking their movement through the transfer chain.

Identifying the make, model, and variant of weapons and ammunition

The first step in the classification and identification process, which is summarized in Figure 1.1, is to determine whether the item in question is a small arm, light weapon, or related item (component, accessory, or ammunition). This Handbook contains detailed descriptions of small arms (Chapter 3), light weapons (Chapter 5), and their ammunition (Chapters 4 and 5), and includes numerous photographs of each class of items. These chapters also identify and describe some of the components of—and major accessories for—small arms and light weapons. Chapter 6 discusses improvised weapons, which are often very different—in form and function—from their factory-produced counterparts.

The next step is to identify the group of small arms, light weapons, or ammunition to which the item belongs. Grouping light weapons is sometimes easier than small arms because light weapons are more distinctive in appearance. Chapter 5 provides detailed descriptions of the main subcategories of light weapons and includes several photographs of weapons from each category. Chapters 4 and 5 provide similar descriptions of ammunition for small arms and light weapons respectively.

12 This may be unique to a particular item, or to a group (most commonly a 'lot' or 'batch') of items.

Box 1.1 Developing arms and ammunition baseline assessments

Research on arms and ammunition, regardless of the context in which it is applied, frequently benefits from identifying the types of weapons in use (whether legally or illegally) in a given location, along with the time period or context in which the weapons are acquired and used. The resulting 'baseline' is useful for detecting the appearance of new makes or models of weapons in a given region, or the influx of large numbers of weapon types or models already present in the region. Analysis of this kind often provides the basis for more detailed investigations, including tracing operations (see Box 1.2). In Syria in 2012, for example, the sudden appearance of distinctive Swiss-made hand grenades not known to be present in the country suggested the possible diversion of these items from a legitimate state-to-state export. An examination of the grenades' markings by specialists resulted in the identification of several items from the same lot, and inquiries directed to relevant states confirmed that the items were diverted from an authorized export to a regional government (ARES, 2016c).[13] These weapons stood out against the other hand grenades common in the region; additional examples of the diversion of the same models were later documented in Libya and Turkey.

Baseline assessments can often be accurately produced through desk-based research. Useful sources of information include images and data on the markings, packaging, and shipping documents of arms and ammunition in the region in question, along with the various reports, databases, and notifications examined in Chapters 8 and 9. Fieldwork is an important supplement to these data sources and may be the only source of data in some cases. Nonetheless, fieldwork is most useful when supplemented by data drawn from other sources. Fieldwork takes many forms, which range from taking a photo of a fired cartridge case encountered during unrelated research to compiling detailed inventories of arms captured from rebel groups on the frontlines. More information on fieldwork is available in Chapter 7.

The final step is to identify the make, model, and variant of the item. This is often the most difficult part of the identification process and usually requires a careful analysis of the physical features of the item and the markings on key components. Available imagery is often too blurry or off-centre to read the markings on weapons and ammunition, precluding the use of markings as a tool for identifying the items. Even in these cases, however, it is often possible to identify the weapon by carefully inspecting key physical characteristics, reviewing data on arms transfers to and within the region where the item was encountered, and interviewing individuals with first-hand knowledge of regional arms flows. Use of these analytical techniques is illustrated and explained in the case study in Chapter 7.

This Handbook provides a thorough overview of how to analyse the physical characteristics of, and markings on, weapons and ammunition, but it does not—and cannot—provide all of the information required to definitively identify each of the many thousands of different makes and models of small arms, light weapons, and ammunition in circulation today. No such compilation of information exists and, even if it did, it would be too voluminous to include in a Handbook

13 See also Holtom, Pavesi, and Rigual (2014, p. 119).

Box 1.2 Arms tracing

With enough information, government authorities and some specialized organizations can trace arms and ammunition to the last known authorized end user. Tracing operations often provide insights into an item's ownership history, including, at times, the point at which it was diverted into the illicit sphere. Tracing operations usually involve 'tracing requests', which are issued to authorities, organizations, or individuals who may hold relevant data regarding the item in question. Ammunition is also traced but generally not with the same precision as a weapon, since individual cartridges are typically marked with a batch or lot number rather than a unique serial number. Arms tracing is enabled by the accurate identification of arms or ammunition. It is, conversely, hindered or rendered impossible by the inaccurate identification of these items.

of this type. There are numerous reference guides from a variety of sources, some of which are freely available. It should be noted that even the best reference materials contain errors and thus information from these and other guides should be corroborated with other sources whenever possible. As a rule, researchers should first seek out information from manufacturers and original users (such as armed forces) of the items in question, followed by authoritative publications that cite these primary sources.

Mapping the chain of custody

Identifying the sources and trafficking patterns of illicit weapons often requires more than just an analysis of the physical characteristics of the weapons and their markings. Mapping arms flows requires careful analysis of other data sources, including reports on international arms transfers, baseline assessments of arms within a given country (see Box 1.1), shipping documents, and the packaging in which weapons are stored and shipped. These sources often contain important clues regarding the chain of custody of small arms and light weapons, and the point at which weapons are diverted to terrorists, criminals, and insurgents.

As defined in Chapter 2, the chain of custody (or 'transfer chain') is the series of transfers and retransfers that starts with the manufacturer and concludes with the delivery of the transferred item to its current owner or operator, or 'end user'. The chain of custody can be relatively short—the current end user receives the item directly from the manufacturer—or it can be long and circuitous, and may involve theft, loss, or diversion. Chapter 2 provides a more in-depth explanation of chains of custody and the many different types of transfers they comprise.

Mapping chains of custody is usually less straightforward than identifying the make, model and variant of a weapon. Often, the point in the transfer chain at

Figure 1.3 Selected markings on a Heckler & Koch HK417 self-loading rifle

1	**Make/manufacturer**	Heckler & Koch (HK) logo
2	**Model name**	HK417
3	**Calibre**	Cal. 7.62 mm x 51
4	**Serial number (lower receiver)**	89-001914
5	**Serial number (upper receiver)**	89-001914
6	**Quality control and proof marks**	HK quality control mark, German national proof mark (letter 'N'), German year of proof code, Ulm proof house proof mark
7	**Fire selector markings**	Pictographic markings
Positive identification		Heckler & Koch HK417 self-loading rifle

Image source: N.R. Jenzen-Jones/ARES

which one starts the mapping process depends on the information at hand. For example, if the only available data source is the markings on the weapon in question and the most recent end user is unknown, the most logical place to start mapping the weapon's chain of custody would be the country of origin (unless the markings identify the importer). In other cases, the end user may be known but not the country of origin (because the markings on the weapon in question are not visible). In that case, the researcher would start their investigation at the other end of the transfer chain, that is, with the most recent end user.

Many of the sources of data on the transfer chain are the same sources used in the weapons identification process. Markings on weapons and ammunition often identify the country of origin or manufacturer, the date of manufacture, and, in some cases, importers or importing countries.[14] Similarly, distinctive physical characteristics of weapons and ammunition sometimes provide clues regarding the date or country of manufacture. Techniques for analysing and interpreting these clues are provided in Chapters 3, 4, and 5.

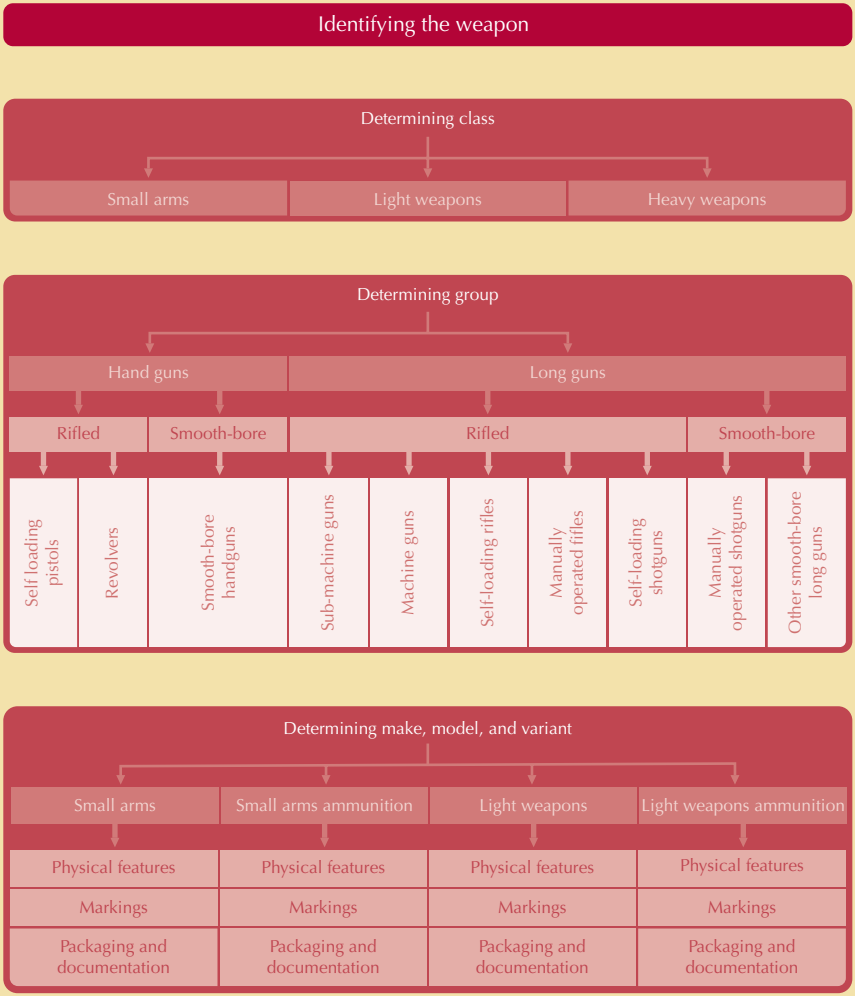
Figure 1.3 shows a readily identifiable weapon, marked with clear and well-known make and model markings. However, even if those particular marks were obscured or removed, the other markings on the weapon would provide valuable information. The calibre marking would help researchers to narrow down the possible models, for example, and the pictographic fire selector (with symbols for safe, semi-automatic, and automatic functions) would aid in this process. But there is other, less obvious, information to be gleaned from the markings. The two-digit serial number prefix '89' indicates the model of the weapon under HK's marking scheme; the letters 'AK' alongside the proof marks indicate the weapon was proofed (and likely manufactured) in 2009; and the 'antler' proof mark indicates the weapon underwent proof testing at the Ulm proof house (Beschussamt Ulm), where German-made HK weapons are proofed.

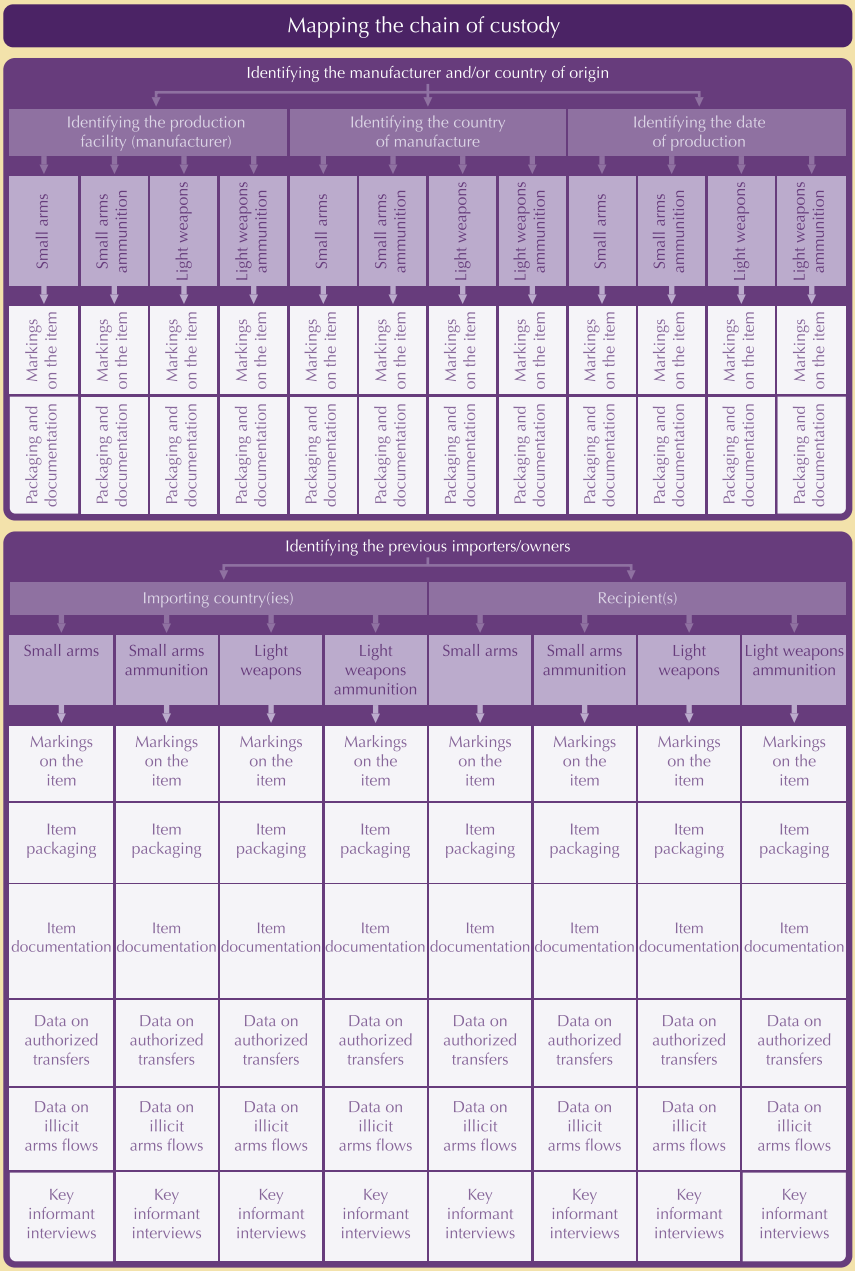
The documentation accompanying arms shipments and the packaging in which these items are shipped also contain valuable information about exporters, importers, export dates, and the quantity of weapons shipped. Examples of documentation and packaging for weapons and ammunition—and a sample of the insights that these materials provide—are included throughout the Handbook.

Official and unofficial data on international arms transfers is another rich source of information on arms flows. Governments and international organizations have

14 Less commonly, exporters or exporting countries.

Table 1.3 Using this Handbook to identify arms and track arms flows




Mapping the chain of custody
Identifying the manufacturer and/or country of origin
Identifying the production facility (manufacturer)
Identifying the country of manufacture
Identifying the date of production
Small arms
Small arms ammunition
Light weapons
Light weapons ammunition
Markings on the item
Packaging and documentation
Identifying the previous importers/owners
Importing country(ies)
Recipient(s)
Item packaging
Item documentation
Data on authorized transfers
Data on illicit arms flows
Key informant interviews

published thousands of records on imports and exports of small arms and light weapons. The specificity and completeness of these records vary, but many contain important information about the sources and recipients of exported weapons and, to a lesser extent, ammunition. Social media is an increasingly important (primarily unofficial) source of information on arms flows. Using social media to systematically map chains of custody is difficult, but it is often a valuable supplement to official reporting. Chapter 8 provides a thorough overview of these data sources, their strengths and limitations, and strategies for analysing and interpreting them.

Mapping the transfer chain after a weapon is diverted to an illicit user is often significantly more challenging than tracking the item's movement through authorized channels (which itself is no small feat). Data on illicit arms flows includes court documents, declassified intelligence reports, media articles, and reports from research organizations such as the Small Arms Survey and ARES. Data on seized weapons is also used to study illicit arms flows.[15] Individual summaries of weapons seizures rarely reveal the sources or trafficking routes of illicit weapons but, when aggregated and combined with other data sources, they can shed light on the type and quantities of illicit weapons, and changes in illicit arms flows over time. Chapter 9 identifies key sources of data on illicit weapons and explains how to analyse them.

Table 1.3 shows the processes through which arms are identified and arms flows are tracked. It is important to note that not all of the details listed in the table are required for every type of analysis, and key details are often not available at all. At the same time, all information is potentially relevant, and seemingly unrelated data can be used to fill information gaps. These and other analytical strategies, tips, and techniques are explained in greater detail in the rest of the Handbook.

— Authors: N.R. Jenzen-Jones and Matt Schroeder

15 See, for example, Schroeder (2013a; 2014b) and Schroeder and King (2012).