
LESSONS AND STORIES ABOUT CONCEPTS ENCOUNTERED IN DISCIPLE-LTA

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This report concerns important concepts and terms involved in the use of Disciple-LTA. Simple definitions of these concepts and terms will not be enough to satisfy analysts who will routinely encounter them in their use of Disciple-LTA. Consequently, we have provided lessons or tutorials concerning these concepts and terms together with stories that illustrate their use in intelligence analysis. This report contains lessons and examples of the sort now being implemented in Disciple-LTA. This account of concepts and terms is not exhaustive. Additional ones will be added as our work on Disciple-LTA goes forward.

**LESSONS AND STORIES ABOUT CONCEPTS
ENCOUNTERED IN *DISCIPLE-LTA***

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1.0 INTRODUCTORY COMMENTS

The *Disciple-LTA* (Tecuci et al., 2005; Tecuci et al., 2007) system rests upon a variety of very important concepts some of which seem very familiar and are used, and frequently misused, in regular discourse among intelligence analysts. *Disciple-LTA* now allows users to call up basic definitions of these concepts. However, from our experience so far in the use of *Disciple-LTA* among analysts, we have found that brief definitions alone do not seem adequate. Brief definitions do not provide users of *Disciple-LTA* with information about the situations in which these concepts will be encountered and about how these concepts can be best employed to capture what is necessary in inferences based on evidence. So, to supplement these definitions in *Disciple-LTA*, each one of the following concepts will be accompanied by a tutorial or lesson about the use of this concept together with one or more stories about how this concept arises in intelligence analysis. These lessons and stories can also be called up during the use of *Disciple-LTA* when the occasion demands.

One of the basic features of *Disciple-LTA* is that it learns on its own based on an analyst's use of it. In intelligence analysis we cannot avoid careful consideration of the properties, uses, discovery, and marshaling of the evidence upon which conclusions are reached. So, there is much to be learned by the analyst and *Disciple-LTA* in coping with the rich variety of situations faced by intelligence analysts. The point here is that the following list of lessons and stories is just a beginning; new concepts will be added as our experience with actual intelligence activities matures. This account merely describes the kind of tutorials and stories we have in mind to promote the most effective use of *Disciple-LTA* among users for whom this system is intended.

In what follows the concepts being defined and illustrated appear initially in **red**. During the account of this listed term it will also be necessary to mention other concepts that we also list to which this term in **red** is related in various ways. These other concepts will be listed in **green** so that the analyst can quickly cross-reference all the terms that we include that are relevant to the term of interest. *Disciple-LTA* maintains an account of all the following concepts as well as new ones that will be added.

2.0 EXAMPLES OF CONCEPTS AND THEIR LESSONS AND STORIES

EVIDENCE

Here is a term that resists easy definition. If you look up this term in the *Oxford English Dictionary* you will be led in a circle and are eventually brought back to the word evidence. One major trouble is that, in terms of its substance or content, evidence has a near infinite variety. We know of three disciplines in which persons drawing conclusions must be prepared to evaluate evidence of nearly every conceivable substance or content. The disciplines are: intelligence analysis, law, and history [it is possible that we have overlooked some others]. But we can recognize quite a small number of recurrent and distinguishable forms of evidence regardless of its substance or content. We will mention these various forms of evidence as we proceed.

There are some very interesting problems associated with the term evidence in intelligence analysis. Some persons in intelligence analysis and elsewhere believe that the term evidence only applies in the field of law and refers to whatever is produced at trial by the parties in contention. Evidence scholars in the field of law have noticed this themselves and have scoffed at the idea that evidence is only encountered in law. They agree that evidence is encountered in any context in which conclusions are being reached. Many analysts prefer the use of the terms data or items of information instead of the term evidence. But this can be very misleading. Any datum or item of information only becomes evidence when its **relevance** to hypotheses being considered can be established by a defensible argument. For example, your car license plate number is a datum on record by your state's department of motor vehicles. But you would have a very difficult time showing how this datum is relevant to any hypothesis you are considering concerning events in Iraq. Here we have a datum or item of information that will never become evidence in this inference concerning Iraq. Someone would say: "Your car license number is totally irrelevant to our present inferences". What is true of course is that a datum or item of information may be totally irrelevant in one context but relevant in another. If you were suspected of committing a crime, your car license number might be quite relevant.

On occasion the term fact is used instead of the term evidence; this can also be very misleading. We often hear someone say: "I want the facts before I draw any conclusion". The problem is: What fact is this person talking about? What we must do is to distinguish between evidence for an event and the event itself. We obtain evidence of some sort and can regard this evidence as factual since we are

observing it with one of our own senses. But what the evidence tells us we will have some uncertainty about; we cannot always regard what the evidence says as being factual. For example, we all hear Mary telling us that it was John who ran into her car last night. We regard Mary's report as a fact since we all just heard what she said. But whether John was the person who ran into Mary's car last night we cannot regard as factual without assessing Mary's **credibility**. Perhaps she was mistaken or being untruthful. In most cases in intelligence analysis we will have some uncertainty about what is reported in the evidence that was obtained.

There are five basic kinds of evidence (Schum, 2001) and we have listed four of them: **tangible evidence**, two kinds of **testimonial evidence**, and **authoritative records** [also called **accepted facts**]. But we can also say that **missing evidence** can be evidence itself when we explore various reasons why we cannot obtain evidence we expect to obtain. In some cases there may be innocent explanations for our failure to find evidence: we are looking in the wrong places; the evidence never existed; or it was lost or destroyed. But another possibility is not so innocent; someone or some group is keeping the evidence from us. This would entitle us to infer that the person or group denying us access to this evidence was engaged in denial or deception efforts against us.

EVIDENCE STORY 1

Here is an analyst who reads in the Washington Post about some cesium-137 that has gone missing from a company in Baltimore, MD. This company makes devices for sterilizing medical equipment of various sorts and uses radioactive materials such as cesium-137. The analyst also knows that cesium-137 could also be an ingredient in a dirty bomb. So, the analyst decides to take this item of information as evidence in an initial chain of reasoning she constructs. She argues as follows: "From evidence that this cesium-137 is missing, we might infer that it has been stolen. If the cesium-137 was stolen, we might infer that the persons who stole it had connections with a terrorist organization. If it was terrorists who stole the cesium-137, we can infer that they intend to construct a dirty bomb with it. Finally, we can infer that this dirty bomb will be set off somewhere in the Baltimore-Washington area". Here we have an item of information from an open source that an analyst defends as relevant evidence on a chilling hypothesis regarding a possible terrorist act. The major importance of this initial relevance argument is that it identifies important and further relevant evidence we should collect.

EVIDENCE STORY 2

The analyst in Story 1 sets to work putting her relevance argument to work in generating new evidence and possibly new hypotheses. What we have in intelligence analysis is a seamless process in which we have evidence in search of hypotheses at the same time we have hypotheses in search of evidence. In Story 1 the analyst used an item of information to generate a hypothesis that made this item evidence because it was linked by a relevance argument to this hypothesis. Now the analyst sets to work gathering evidence concerning all the sources of uncertainty in her argument all of which will be relevant to her final hypothesis. Suppose she discovers evidence that the cesium-137 was stolen by a person having connections with a terrorist organization and that this person lives in Silver Spring, MD. Among other things the analyst might wish to revise her hypothesis by saying that a dirty bomb will be set off somewhere in Washington, DC, since Silver Spring, MD is within walking distance of Washington, DC.

TANGIBLE EVIDENCE

This major form of **evidence** involves anything an analyst can observe personally to see what events the evidence reveals. The word tangible refers to the fact that the user of the evidence, the analyst drawing conclusions from it, can examine it directly to determine what events the evidence reveals. There are many examples of tangible evidence including objects, documents, images, video and audio recordings, tables of measurements, charts, maps, and diagrams. What is interesting is that nearly all of the "INTs", such as IMINT, COMINT, SIGINT, TECHINT, and MASINT supply tangible records of various kinds that the analyst can examine in order to extract evidence from it. The exception involves HUMINT that comes from human sources who provide **testimonial evidence** based on observations they have allegedly made. On some occasions, however, it requires a person with special skills to tell what a tangible item reveals. For example, the opinions of a photo interpreter may be necessary in order to show what events are revealed in a photograph. Persons with special skills in interpreting tangible evidence play roles analogous to "expert witnesses" who appear in trials at law.

Some items of tangible evidence reveal the occurrence of an event, in which case the tangible item is said to provide positive evidence. A tangible item that reveals the non-occurrence of an event is called negative evidence. When we describe one form of testimonial evidence, we will also encounter both positive and negative evidence. There is no importance ordering among positive and negative

evidence. Discovering that some event did not occur can be as important in intelligence analysis as discovering that this event did occur.

Assessing the credibility of tangible evidence requires answers to three major classes of questions. The first concerns the **authenticity** of the item; is this item what it is represented as being? Here is a document allegedly describing the membership of a certain terrorist organization. Is this account genuine, or has it been contrived in order to mislead us? The second involves **reliability**. This is an especially important attribute of any sensing device that produces tangible records of some kind. The question here concerns the extent to which we would obtain the same result if we had exercised the sensor on multiple occasions. Would we get the same result each time? The third question concerns the **accuracy** of the device used to obtain some record. How sensitive is this device or what is its resolving power? Perhaps this device was not sensitive enough to allow an analyst to make the fine discriminations that may be required in order to reveal the event(s) of interest to the analyst.

TANGIBLE EVIDENCE STORY 1

Here is an analyst interested in an inference about the extent to which the Iranians are now supplying shaped explosive devices that have claimed the lives of so many of our soldiers in Iraq. A metal fragment found at the scene of a recent explosion on a road near Al Kut in Iraq is provided for the analyst. This fragment reveals traces of an explosive device. This fragment also contains a serial number. The analyst traces this serial number and finds that it has occurred on other similar devices that have been found in Iraq. The serial number on this fragment allows the analyst to infer that the shaped explosive device was fabricated at the Sattari munitions factory located just north of Tehran in Iran.

TANGIBLE EVIDENCE STORY 2

The same analyst as in Story 1 decides to find out more about the Sattari munitions factory in Tehran. She has been provided with a document showing that the Iranian Islamic Revolutionary Guards Corps [IRPG] Qods Forces orders various explosively formed projectiles [EFPs] from the Sattari company using a high-security requisition scheme. To find out more about the Sattari factory she is shown a recent satellite photo of the Tehran area. But she cannot tell what this photo reveals about the location of the Sattari factory. But a photo interpreter comes to her assistance. He shows her where the Sattari factory is located in the Nobonyad neighborhood of the Lavizan section of north Tehran.

TESTIMONIAL EVIDENCE

This second major form of **evidence** arises when analysts have nothing tangible they can examine for themselves to determine the occurrence or non-occurrence of events of interest. In such instances analysts must rely upon other persons who claim to have either made observations of these events or have some other knowledge about whether these events occurred or not. The testimony or report provided by these human sources is called HUMINT, where the source is often a foreign national who serves as an informant. These foreign sources are often referred to as "assets". But HUMINT sources can also be members of our own military or other organizations. For example, the members of a Marine reconnaissance patrol can provide testimonial accounts of events they have observed.

There are several very important questions we need to ask of sources of HUMINT. The first is: how did you obtain knowledge of the event(s) you have just reported to us? There seem to be three possible answers to this question. The source might say: "I observed this event directly myself", or "I got personal knowledge of this event during my direct observation". We would say in such instances that the source is testifying on the basis of personal knowledge. The second answer might be: "I did not observe this event myself but heard about it from another source". We recognize this as being secondhand or hearsay evidence. The third answer arises in situations like the following. The source tells us that event E occurred. Asked if he observed E himself or heard about it from another source, our source says no. But then he says: "What I observed was evidence that events C and D occurred, from which I then inferred that event E also occurred". This form of testimony has a name; it is called opinion evidence. What is interesting is that HUMINT evidence about a future event can only be opinion evidence. This event cannot have been observed since it has not happened yet.

Another important consideration concerning an item of HUMINT is whether an asset provided this testimonial evidence voluntarily or in response to a question we asked of him. If it was given in response to a question we asked we have already appreciated the significance of the asset's answer. It is true that in either case the asset might be untruthful. However, suppose the asset volunteers an item of HUMINT and we believe the asset is being untruthful. A very interesting question is: why is this person telling us this particular lie in preference to all the other lies he might have told us? Answers to this question may be quite interesting and raise new possibilities we had not thought of.

But now we come to two major characteristics of human sources that are quite distinct and must be separately considered, they are the source's **competence** and **credibility**. As we discuss below, the

source's competence concerns whether the source has actually made an observation he claims to have made or had access to the information he reports, and whether he understood what he observed or had access to well enough to provide us with an intelligible account of what he observed or had access to. But the source's credibility depends on entirely different questions. We are first concerned about the source's **veracity** and ask: does this source actually believe what he is telling us? Then we must consider his **objectivity** and ask: did this source base his beliefs on the basis of the sensory evidence he obtained or whether he based his beliefs on what he either expected or wished to occur? Finally, we consider his **observational sensitivity** under the conditions in which an observation was made. Here we ask: how good was the sensory evidence this source obtained?

Here comes the source of many errors in intelligence analysis involving HUMINT: competence and credibility are confused. We have frequently seen statements such as the following: "We can believe what this source has told us because he had good access to what he reported". This statement is a glaring non sequitur. The source may have had all the access in the world but be lying about what he observed. In short competence does not entail credibility nor does credibility entail competence. They are entirely different characteristics of HUMINT sources and must not be confused.

Finally, we mentioned earlier that testimonial evidence can be either positive or negative evidence. An item of HUMINT might record the occurrence or nonoccurrence of an event. We also mentioned that there are two kinds of testimonial evidence. In some cases a human source might provide unequivocal testimony about what she observed. The source might say: "I am sure that it was Ahmed M. who led the Taliban attack on the American outpost in Konduz in Afghanistan". But in many cases a HUMINT source may provide an equivocal or hedged account of what she observed. Our source might have said instead: "I am 70% sure that it was Ahmed M. who led the Taliban attack on the American outpost in Konduz in Afghanistan". But sources can equivocate in words rather than in numbers. The source might say: "I am quite sure that it was Ahmed M. who led the Taliban attack on the American outpost in Konduz in Afghanistan". In such cases human sources are in fact commenting on their own credibility and we always have choices to make about whether to believe their own assessments of their credibility.

TESTIMONIAL EVIDENCE STORY 1

A topic of great current interest is the extent to which Islamic jihadist groups now possess various chemical, biological, or even nuclear weapons such as dirty bombs. We suppose that there are persons

in these groups who could construct these kinds of weapons themselves; but we also know that they could be acquired from countries containing existing stockpiles of these weapons. This would, of course, be the easiest thing that groups bent on terror could do; find someone willing to sell these kinds of weapons. For many years we have known about a warehouse in the small town of Gornyy in Russia in which old chemical weapons have been stored. Gornyy is about 200 kilometers south from the Russian city of Saratov and is near the border between Russia and Kazakhstan. The chemical weapons at Gornyy, including lewisite [an arsenic-based gas] and yperite [mustard gas], were supposed to have been destroyed but apparently never have been.

Suppose we have an asset code-named "Bulldog", a Russian national, who has been tasked with informing us about any foreigners [non-Russian] who visit the warehouse in Gornyy. Bulldog is currently employed as a security guard at the warehouse in Gornyy. He knows that we are particularly interested in persons from the Middle East who might come to Gornyy hoping to acquire some of these old, but still potentially lethal, chemicals. Two days ago, Bulldog informed us that he admitted a man who gave his name as Ziyad Khaleel, who showed Bulldog a passport from Kazakhstan bearing his name. Bulldog admitted him because he had an appointment with the director of security in the warehouse in Gornyy. Bulldog noted that the picture on the passport did not exactly resemble its bearer Ziyad Khaleel, but he admitted the man anyway, choosing to inform us immediately. We happen to know that the name Ziyad Khaleel is one of the aliases used by Abu Ayub al-Masri, who is the Egyptian-born leader of the group Al Qaeda in Mesopotamia. This group is one of the most dangerous insurgent groups now operating in Iraq.

Although Bulldog gave us this report voluntarily, he did give it in response to a more general question we had asked him. Further, his testimony was based on a personal observation and was unequivocal in nature. His report was not hedged in any way. We are of course concerned about Bulldog's **competence** and **credibility** in his report. We would like to know if Bulldog was in fact on duty the day he says he encountered the man named Ziyad Khaleel. We can suppose Bulldog had enough understanding of what he observed since he gave us an intelligible report. As far as his **veracity**, **objectivity**, and **observational sensitivity** are concerned, we have never had reason to question these attributes of Bulldog's credibility in his past reports to us. But we have additional information given in Story 2.

TESTIMONIAL EVIDENCE STORY 2

For quite some time we have been looking for Abu Ayub al-Masri, hoping to capture or kill him because of his Al Qaeda connections in Iraq. But a week ago we obtained a report from another asset code-named Foxtrot who knows Abu Ayub al-Masri personally. Foxtrot is a foreign national in Kazakhstan and provides us with information concerning terrorist activities in this region. A week ago, before Bulldog's report, Foxtrot reported to us that he saw Abu Ayub al-Masri in the coastal city of Aktau in Kazakhstan. This is very important information since it corroborates what Bulldog has told us. Recall that Gorny is very near the Russia-Kazakhstan border. If Abu Ayub al-Masri was in Kazakhstan a week ago he could very easily have slipped over to Gorny in Russia to try to obtain some of the chemical weapons stored there.

Taken together, these two items of HUMINT testimonial evidence would certainly arouse our suspicions that members of Al Qaeda in Iraq are at least attempting to obtain chemical weapons to use on our forces and their allies.

MISSING EVIDENCE

How can evidence missing be **evidence**? In the first place, to say that evidence is missing assumes that an analyst expected to find it but was unable to do so. An analyst will naturally ask many questions during the process of discovery; in fact, productive inquiry is perhaps the most important ingredient of discovery or investigation in intelligence analysis. So, here is a question asked by an analyst that suggests a possible line of evidence. But the analyst is unable to answer this question and cannot find the evidence suggested by this question. There are basically four reasons why this can happen. The first three are usually of no inferential importance:

- The evidence never existed [perhaps the analyst's question was idle].
- The evidence existed but it has been destroyed or lost.
- The analyst is looking in the wrong places or is querying the wrong sources.

But the fourth possibility gives rise to some inferential consequences that are evidentially interesting. It is:

- The evidence exists but someone or some organization is keeping it from us.

The natural question raised by this fourth possibility is that the person or group keeping this evidence from us has an obvious reason for doing so. Our discovery of this evidence would be to our distinct advantage and to the distinct disadvantage of the person or group attempting to keep the evidence from us. This immediately raises our concern about denial and deceptive efforts that are being made against us.

The first thing we are obliged to notice is that missing evidence can either be **tangible** or **testimonial evidence**. The person or organization to whom we have requested an item of evidence may refuse to produce a tangible item or refuse to provide testimony about an event of interest to us. The non-production of a tangible item or testimony can in most cases license an adverse inference against the person or organization refusing to provide us with the evidence we seek. The two stories we will later tell about missing evidence provide examples of how missing evidence can be important evidence when we take careful account of the reasons why it is missing.

There is one very important distinction to be made and it is one that most of us have heard about. This distinction is: missing evidence is not the same as negative evidence. Recall our discussion of how **tangible** and **testimonial evidence** can both be negative evidence that records the nonoccurrence of an event.

Negative evidence is evidence of absence; but missing evidence is the absence of evidence. What we all learn is that evidence of absence is not the same as the absence of evidence. In the prelude to the current Iraq war we heard several sources giving us positive evidence about Saddam Hussein's storage of WMDs all over Iraq; and heard only some negative evidence about the non-existence of these WMDs. We were of course interested in the missing evidence we were unable to obtain from Saddam's government. How many WMDs were in existence in Iraq that they were not telling us about? Since 2003, however, we have obtained only negative evidence about the existence of these WMDs.

MISSING EVIDENCE STORY 1

The first story we tell about missing evidence is a true story that resulted in a precedent being set in our Anglo-American judicial system regarding an adverse inference being justified by the non-production of evidence. It is called *The Case of the Chimneysweeper's Jewel*. In London around 1760 a young boy who served as a chimneysweeper's apprentice found a diamond ring among the sweepings he accumulated one day. The boy and his master took the ring to a jeweler in London to have it

appraised. But the jeweler later refused to return the stone that was in the ring. He returned the setting that the stone was in but not the stone itself. The boy's master filed an action of recovery against the jeweler in the courts of London. At the trial, the judge required that the jeweler produce the stone, which the jeweler refused to do; almost certainly he had already sold it. The judge ruled that the jeweler must pay an amount to the boy assuming that the missing stone was a diamond of the size of the setting and was of the highest value for diamonds of this size.

MISSING EVIDENCE STORY 2

The context of this story is true but some of its details are fictitious. We have well-publicized interests in whether the Iranians are developing nuclear weapons. But we also have interests in Iran's development of missiles capable of carrying nuclear warheads. In particular, we have interests in the Hemmat Industries Group that is suspected of fabricating various versions of the Ghadar missile in a tunnel complex in the Bar Jamali Mountain in Iran. The version of the Ghadar missile in which we have the greatest interest is a version having a range of up to 5,500 km, enough to target all cities in the Middle East and several in Eastern Europe. We wish to have some evidence about progress in developing a missile in Iran having this range. Naturally, our requests to visit this tunnel complex in the Jamali Mountain are denied. But, failing this, we have interests in interviewing persons at the Hemmat Industries Group who might give us any evidence we can discover concerning progress in developing missiles such as the Ghadar. One person we know of who has served for several years as an expert in increasing missile ranges, and who works at the Hemmat Industries Group, is a physicist named Dr. Ali Asgari, who was observed recently near the tunnel complex in the Bar Jamali Mountain. We decide to invite Dr. Asgari to a meeting of the physics society meeting in Geneva, Switzerland hoping we can obtain some information from him. But all of our invitations to him at the Hemmat Industries Group have gone unanswered and we have also been denied access to his other possible addresses. This missing evidence entitles us to infer that Dr. Asgari is involved in Iran's missile development and, because of his reputation, we infer that the Iranians are making definite progress in developing at least medium-range nuclear missiles.

AUTHORITATIVE RECORD EVIDENCE [ACCEPTED FACTS]

Different forms of **evidence** require different questions to be answered regarding their **credibility**. But there is one form of evidence for which we would not be asked to establish its credibility; i.e. it is an

established fact. Common instances involve such authoritative records as mathematical or statistical tables, celestial and tide tables, and tables showing various physical or chemical quantities. For example, if your analysis involved some trigonometric calculations, no one would ask you to prove that the sine of an angle of 38 degrees is 0.61566. Nor would anyone ask you to prove, in a statistical calculation involving the significance of the difference between two sample means, that value of the **t** distribution, when you have ten degrees of freedom and wish to see the probability of just 0.01 that the means differ by chance alone, is **t** = 3.169. If your analysis involved showing the time of high tides at a certain location on a certain date, you would consult a tide table and never be asked to prove that the time of high tides at this location and day were the times you selected. All that would be required in all of these instances is that you read the relevant table correctly.

But there are many other instances in which we use accepted facts that are not necessarily tabled. For example, no one would ask you to prove that the temperature in Iraq can reach 120° F in summer months, or that the population of Baghdad is greater than that of Karbala in Iraq. Many events in the past can be accepted without further proof. For example, that the twin towers of the World Trade Center in New York City were destroyed on September 11, 2001, and that Saddam Hussein is now dead, are accepted facts.

AUTHORITATIVE RECORDS STORY

One of the most famous examples of the use of authoritative records involves Abraham Lincoln's defense of a man named Cal Armstrong. Armstrong was accused of first-degree murder charging that he killed a neighbor with a pitchfork. The major witness against Armstrong was a man who testified that he saw Armstrong stick his pitchfork in the victim, killing him instantly. In Lincoln's defense of Armstrong he asked the witness what time of day he made this observation. The witness replied that it was about 1:00 AM. Lincoln then asked the witness how he could see who killed the man in the dead of night. The witness replied that he could see Cal Armstrong by the light of a full moon. Then Lincoln produced a copy of *The Farmer's Almanac* that showed that on the night of the murder there was a new moon, and thus no moon at all. Cal Armstrong was acquitted of the murder charge against him.

RELEVANCE

Relevance is one of three important credentials of **evidence**; the other two are **believability** and **inferential force, weight, or strength**. The term relevance is what separates mere items of information or

data from being evidence. Many years ago Charles Darwin said that any information, to be useful, must be for or against some view. Taking a cue from what Darwin said, we assert that data or items of information only become evidence when they are shown, by defensible arguments, to be for or against some hypothesis or possible conclusion. In short the term relevance indicates a relation between evidence and something we are trying to prove or disprove from it.

There are two kinds of relevance; direct and indirect. Evidence is directly relevant if there is a defensible argument or chain of reasoning that links the evidence to some hypothesis being considered. As an example of directly relevant evidence, consider the Evidence 1 Story. We have evidence about the missing cesium-137 in Baltimore, MD. We must first infer that this cesium-137 was missing; this is a **believability**-relevant link that forms the very foundation of all subsequent relevance arguments. From the inference that the cesium-137 was missing, the analyst formed the following chain of reasoning: the cesium-137 was stolen; it was stolen by someone in a terrorist organization; the terrorists will construct a dirty bomb using the cesium-137; the terrorists intend to set off this dirty bomb somewhere in the Baltimore-Washington area [this is the major hypothesis being entertained at this point]. Each of the links in this chain of reasoning is probabilistic in nature. They are sources of doubt since each statement might be true or false. For example, the cesium-137 might have been stolen but by someone who has no terrorist connections. So, the strength of the chain of reasoning in this case depends on the strength of all of its links. Here we come to the role of indirectly relevant evidence.

Indirectly relevant evidence is usually termed ancillary evidence and its major role is to show how strong or weak are the links in chains of reasoning set up by directly relevant evidence. Ancillary evidence is often appropriately termed meta-evidence since it is evidence about other evidence. For example, we are concerned about the credibility of the person who tells us that the cesium-137 was missing. Suppose we find evidence that this person is frequently mistaken and looks in the wrong places. This would tend to weaken the credibility foundation of our inference. Perhaps this cesium-137 will show up at another location. Or, suppose we find evidence that the security in the building where the cesium-137 and other radioactive materials are stored is very lax; other materials have been stolen in the past. This would tend to strengthen our inference that the cesium-137 had in fact been stolen.

RELEVANCE STORY 1

This story combines directly and indirectly relevant or ancillary evidence and is based on the details given in Testimonial Evidence Stories 1 and 2. Here is what an analyst named Jim infers from Bulldog's

evidence regarding the man he told us about who arrived two days ago at the warehouse in Gorny, Russia where chemical weapons are stored. Bulldog says the man gave his name as Ziyad Khaleel. Jim takes this as directly relevant evidence on the hypothesis that Al Qaeda is acquiring chemical weapons for use on our soldiers and others in Iraq. Jim first infers that this person was in fact Abu Ayub al-Masri, the leader of the group Al Qaeda in Mesopotamia. Jim does so on the basis of ancillary evidence that Abu Ayub al-Masri has used the name Ziyad Khaleel as an alias. Jim might also employ as ancillary evidence here Foxtrot's evidence of Abu Ayub al-Masri being in Kazakhstan a week before Bulldog's report. From this Jim infers that Abu Ayub al-Masri is visiting someone at the warehouse in Gorny for the purpose of acquiring chemical weapons of some sort. Jim then infers the hypothesis that that Al Qaeda is acquiring chemical weapons for use on our soldiers and others in Iraq.

RELEVANCE STORY 2

How defensible is the argument just described in Story 1? One thing that can be depended upon is that different analysts will construct different arguments from the same evidence and will criticize the arguments made by others. Here is another analyst named Ruth who has just heard the argument in Story 1. She offers the following different interpretation of Bulldog's evidence. Ruth argues first that we cannot infer that it was Abu Ayub al-Masri who actually showed up in Gorny. She notes that the name Ziyad Khaleel is quite common in Egypt and may be more common than the name Abu Ayub al-Masri. Ruth also notes that there is evidence that Abu Ayub al-Masri has used several other aliases and wonders why he chose the alias Ziyad Khaleel on this occasion. Maybe he only uses this alias in his visits to Egypt. Further, she claims that the argument in Story 1 is hardly complete. As Ruth further notes, the Story 1 argument does not contain any inference about whether the security official in Gorny could be bribed into selling some of the chemical weapons for which he is responsible. And she notes the absence of the further inference that a deal was reached that would allow some chemical weapons to be sent to Al Qaeda in Iraq. Finally, Ruth notes that the confidence placed in the asset Foxtrot in Story 1 is overblown. She notes evidence that Foxtrot has provided other reports about the appearance of Abu Ayub al-Masri in Kazakhstan when we know that he was somewhere else at the time.

BELIEVABILITY

The term believability is often used as a synonym for the term **credibility**. Credible evidence refers to the extent to which we can believe what this evidence is telling us. As we have also noted, the

questions we ask about the credibility of **tangible evidence** are different from the ones we ask about the credibility of **testimonial evidence**. Further, in addition to the credibility of testimonial evidence we inquire about the **competence** and credibility of its human sources. As we will note in our discussion of the term **competence**, there are also competence issues involved in tangible evidence as well.

However, in Disciple-LTA we will also employ the term believability in a somewhat expanded way. The reason is that we often have mixtures of tangible and testimonial evidence in which we must consider jointly attributes of competence and credibility, as well as other matters such as the rareness or improbability of events reported in the evidence. So, when we are considering aggregates or mixtures of evidence we will consider the believability of these mixtures on grounds that the term believability is somewhat more general than the term credibility, and in fact includes credibility as one of its ingredients.

BELIEVABILITY STORY

Suppose we have the following mixture of testimonial and tangible evidence that all concerns the same hypothesis H: That an Iraqi government official, named Emir Z., who has been respected by coalition forces, is actually cooperating with the Iranian Islamic Revolutionary Guards Corps [IRGC] in extending Iranian military influence in Iraq. The evidence we have is as follows. We have an item of HUMINT from a source code-named Wallflower who reports that he saw Emir Z. leaving a building in Ahwaz, Iran in which the IRGC has offices. Wallflower, an Iranian national, issued his report in the Farsi language that was translated into English by a paid interpreter and then recorded in a document that was provided for us. Then we have IMINT in the form of a photograph taken of Emir Z. at an IRGC Qods Force base outside Dezful in Iran. Emir Z. was identified in this photo by one of our own intelligence professionals who has had contact with Emir Z. The analyst evaluating this evidence says we are entitled to conclude that hypothesis H is true, which essentially means that Emir Z. does not deserve our respect since he is cooperating with Iranians in ways contrary to our interests in Iraq. To what extent should we believe this conclusion?

We have a fairly complex combination of credibility and competence questions to answer. First, we have Wallflower's competence to consider; was he at the location in Ahwaz, Iran where he allegedly saw Emir Z.? Then, we have Wallflower's credibility attributes to consider, namely his veracity, objectivity, and observational sensitivity under the conditions in which he made his alleged observation. But then we must consider the competence of the person who translated Wallflower's report into English. But

this translation was given to us in the form of a document whose authenticity, reliability, and accuracy we must evaluate. But then we have the tangible photo evidence to consider and must assess its authenticity, reliability and accuracy, as well as the competence of the intelligence professional who identified Emir Z. in this photo.

This example shows an instance in which Disciple-LTA uses the term believability with reference to this mixture of evidence. We need a more extensive term that allows us to capture all of the competence and credibility issues that are so often involved in intelligence analysis.

CREDIBILITY

The term credibility is used in variety of situations; we speak of credible sources, credible evidence, and credible stories. As we noted in defining credibility, this means that a source, evidence, or a story is **believable**. However, the term believability is somewhat more extensive or exhaustive than the term credibility. For example, the believability of a source of HUMINT depends on the source's **competence** as well as on her credibility. Further, as we noted in discussing the term believability, when we have mixtures of **tangible** and **testimonial evidence** we have more than credibility issues to worry about. Consequently, in Disciple-LTA we use the term credibility with reference to individual items of evidence and to its sources. The concept of credibility has different attributes for different forms of evidence. This fact is not always recognized and leads to some confusion on the part of intelligence analysts. For example, we have heard the term **veracity** being applied to items of tangible evidence, which actually makes no sense since veracity is a property of human sources of evidence. Here is a summary of credibility attributes for tangible and testimonial evidence.

The three attributes of the credibility of tangible evidence are: **authenticity, reliability,** and **accuracy**. The first of these three attributes, authenticity, applies to all tangible evidence and concerns whether the item of evidence is what it is claimed to be, or represented as being. The attributes reliability and accuracy apply mainly to tangible items that have been produced by sensing or measuring devices of some sort. Is the device reliable in the sense that it gives repeated or replicable indications of the same event? Accuracy refers to the event to which the sensor or other device is sensitive enough to allow discriminations to be made among many possible event states.

For testimonial evidence there are three different attributes of concern, all of which concern the sources of such evidence. These attributes are: **veracity, objectivity,** and **observational sensitivity** under

the conditions of observation. A human source has veracity, or is being truthful, to the extent that this source is reporting events she really believes have occurred. If we believe she is reporting against what she believes, she is not being truthful. A human source is objective to the extent that she bases her beliefs on sensory evidence she obtained rather than upon what she either expected or wished to occur. Finally, if the source did base her beliefs on sensory evidence, we must ask how sensitive or accurate her senses were under the conditions in which she made this observation.

We have noted repeatedly that the **competence** and **credibility** of human sources are distinct characteristics and must not be confused. This is one reason why the believability of an item of HUMINT rests upon more than the source's credibility; it also depends of the source's competence.

CREDIBILITY STORY 1

Consider again **Tangible Evidence** Story 1 in which an analyst is provided with an object in the form of a metal fragment allegedly found at the scene of a recent explosion on a road near Al Kut in Iraq. The analyst is told that this fragment reveals traces of an explosive device and carries what appears to be a serial number. The major credibility issue here concerns the **authenticity** of this object. This object is represented to her as being found at the scene of an explosion near Al Kut in Iraq; that the object reveals traces of an explosive device; and that the object contains what appears to be a serial number. The analyst should be concerned about whether these three representations are in fact true. She would be later embarrassed upon finding out that this object was not part of an explosive device made in Iran, as she concluded, but was a piece of the engine block of a Bradley Fighting Vehicle that was destroyed by a grenade launcher at a different location. Somewhere along the line in the chain of custody of this object, it was confused with another object. We all face this same authenticity issue every time we have blood, urine or other tests. Do the results of these tests actually apply to us, rather than to some other patient whose tests have been confused with our own?

CREDIBILITY STORY 2

Now consider **Testimonial Evidence** Story 2 in which we have the source named Foxtrot who reported to us that he saw Abu Ayub al-Masri in the coastal city of Aktau in Kazakhstan. Recall that we suspected that Abu Ayub al-Masri, an important Al Qaeda figure in Iraq, was in Gorny, Russia trying to obtain chemical weapons. What do we know about Foxtrot's credibility? Among the evidence items we have about Foxtrot, we learn that he has been frequently intoxicated. Further, Foxtrot says he knows

Abu Ayub al-Masri personally. From another source, we learn that Foxtrot and Abu Ayub al-Masri are not on speaking terms and that Abu Ayub al-Masri has on several occasions threatened to kill Foxtrot. In fact, we learn from this source that this is why Foxtrot left Iraq and now lives in Aktau in Kazakhstan. And, we have on record a prior assertion Foxtrot made to one of our case officers. Foxtrot said that he would not miss a chance to get Abu Ayub al-Masri, whom he called "that dog of Satan", into trouble. So we have assorted evidence that causes us to be concerned about Foxtrot's veracity, objectivity, and observational sensitivity.

AUTHENTICITY

Authenticity is an attribute of the **credibility of tangible evidence** of any kind that the analyst can examine for herself to see what events this evidence might reveal. Examples of tangible evidence include objects, documents, images, charts, maps, tables of measurements of any kind, and many other items. Authenticity concerns whether a tangible item of any kind is what it is represented as being, or what a source claims it to be. Authenticity is perhaps the most important attribute of the credibility of tangible evidence since, if we believe this tangible item is not authentic, we immediately suspect that we are being deceived in some way. The trouble is that we can be deceived in many ways including the possibility that we are deceiving ourselves. Perhaps we did certain things to a tangible item that have altered or changed it in some way from what it was originally. In short, we can deceive ourselves in addition to the possibility that others are deceiving us. We will examine both kinds of instances in which intelligence analysts may have inauthentic evidence.

First, consider efforts of adversaries who intend to deceive us; they can do this in any way imaginable. Objects can be contrived or altered in various ways to make us believe that objects of this kind have properties that they do not actually have. Documents can be forged, altered, or contrived in ways to make us believe that certain events have occurred or will occur when they have not or will not occur. Images can be altered or contrived in a variety of deceptive ways. Tables of measurements can be altered or faked. Diagrams can be altered or contrived in various ways to mislead us. As we know, Internet addresses may not reveal the true identity of persons displaying various items that may be harmful to us in various ways. One major trouble is that it may require considerable expertise to determine the authenticity of a tangible item.

Naturally, we have an interest in how we came into possession of a tangible item in the first place. What do we know about the person who provided this item and how he came into possession of it?

Here we come to a most important element in the detection of inauthentic evidence; we need to establish the chain of custody through which a tangible item has passed before it reaches the analyst who will examine it and possibly use it as evidence. We need to know who had this item at what times and what they might have done to it while it was in their possession. It is by examination of chains of custody that we may detect reasons why we have misled ourselves by the way in which we have handled evidence at various links in chains of custody.

For example, a source or asset provides us with an item of HUMINT. Suppose this source provided the account in a foreign language. We are of course concerned about the ability or **competence** of the person who translated this account into English. So now we have a translation of the original report. Perhaps this translation was then edited by another person who might have made changes in this translated version or even deleted portions of it. Finally, suppose this translated and edited version is typed into a computer for distribution to interested analysts. We could ask whether there were any errors introduced in this transmission process. The main issue here is the authenticity of the version of this report the analyst actually sees. How faithful is this version of the report the analyst actually sees compared with the source's original report? Here are two stories about authenticity concerns. The first involves the efforts of others to deceive us; the second involves an instance in which we deceive ourselves.

AUTHENTICITY STORY 1

This story happens to be true. During efforts to link Saddam Hussein to the development of weapons of mass destruction [WMD], a letter allegedly from someone in Saddam's government to a person in the country of Niger was discovered. This letter involved the acquisition by the Iraqis of certain nuclear materials available in Niger. There is considerable discussion about the actual role of this letter in the beliefs among members of our government about how influential this letter was in convincing our planners that Saddam indeed had WMDs. In any case, we acted on this belief and invaded Iraq only to discover that Saddam did not have WMDs. There is also controversy about when and who discovered that his letter was forged. Clearly it was a fake in which the person who signed the letter on behalf of the representatives in Niger could not have signed it. This inauthentic letter appears to have contributed to the situation we are now facing following our invasion of Iraq.

AUTHENTICITY STORY 2

In some cases we can so easily mislead ourselves without being aware that we are doing so. This story is based on an event that occurred many years ago. We had some very high quality photographic evidence that a certain adversary was gathering forces in a certain part of the world. Actions were taken only to discover that we were mistaken. The photo was labeled as having been taken two days ago, when it was in fact taken two weeks ago. Our evidence was inauthentic simply because it was mislabeled. What it comes to is that there are probably as many ways we can mislead ourselves as there are ways in which others can mislead us through evidence that is not authentic.

RELIABILITY

This term we say is an attribute of the **credibility** of certain types of **tangible evidence**. Unfortunately, this term is also used in place of the term credibility with reference to human sources of **testimonial evidence**. We illustrate the trouble this causes in a minute. Basically, a process of some sort is reliable to the extent that it provides the same results on repeated applications of this process over time and under the same conditions. You say that your car is reliable to the extent that it will take you where you want to go for some period of time in the future. A test of some sort is reliable to the extent that provides the same, or nearly the same, results every time it is administered. Many forms of tangible evidence are provided by sensory and other devices. A natural question is: how reliable is the device used to collect and process this tangible item of interest in an intelligence analysis? Would we have observed the same result if we had repeated the observations this device allows? In answering this question, we would naturally ask whether the device had been properly maintained and how reliable have been devices of this sort on past occasions on which they have been employed.

As a synonym for **credibility** with reference to human sources, the concept of reliability comes up way too short. As we have seen, the credibility of sources of HUMINT rests upon the source's **veracity**, **objectivity**, and **observational sensitivity** under the conditions of observation. If the term reliability is applied to human sources, the only thing that it would indicate is that the source would show up on repeated occasions to provide reports. Whether we should believe what this source tells us depends upon the three attributes just mentioned. But there is one instance in which the term reliability makes sense with reference to human sources of testimonial evidence. The three attributes just mentioned are not necessarily stationary, or repeatable, over time and in different contexts; the same applies to a

human source competence. For example, a source may be truthful at one time but not at another; or be truthful about some events but not about others. A source may be competent to provide information about some events but not about others.

RELIABILITY STORY

You have just been cited by a traffic officer for going 65 mph on a street in your city for which the posted speed limit is 35 mph. You disagree with this citation; you saw your speedometer reading saying that you were going at 34 mph just before you saw the flashing blue lights of the police vehicle. You decide to object to this citation in a traffic court. Fortunately, you have a friend who works in the same division as the officer who issued you this citation. He will testify that the arresting officer has been repeatedly disciplined for the lack of care he shows his radar gun. Several fellow officers have mentioned that he frequently drops it on the ground and leaves it on the floor of his car. If this device was not well maintained it cannot be expected to give reliable readings. The same of course applies to the devices used to provide tangible evidence for intelligence analysis.

ACCURACY

Accuracy assessments are vital in any form of intelligence analysis. We have listed accuracy as a major attribute of the **credibility** of **tangible evidence**. However, it is also an attribute of the credibility of **testimonial evidence** except that we listed the attribute as **observational sensitivity**. We could just as easily have said observational accuracy, except that we did not wish to see this confused with the accuracy of sensing devices that provide so many forms of tangible evidence.

The accuracy of tangible evidence is of obvious concern and refers to the extent to which we are allowed to make discriminations among possible event states that might be revealed in the tangible item. For example, a photo image is accurate if allows us to identify correctly persons or objects revealed in the photo. Some sensing devices come with their own indications of accuracy. For example, in ELINT records of the emissions given off by radars, the image will provide an error ellipse showing the probable location of an enemy radar installation. In addition, many graphs of relationships between two or more variables will show confidence intervals plotted around sample means that are the result of repeated measures or observations. In short, in many cases involving tangible evidence a sensor or measuring device of some kind will never provide us with a uniquely true or correct indication of some event, but it can provide us with probabilistic assessments of true or correct values.

The accuracy of sensing devices will depend of course on settings of the parameters governing the operation of the device. For example, quality or accuracy of a photo will depend on the setting of the f-stop and shutter speed of the camera used to take a photo. In many instances in intelligence analysis there will be insufficient time to make careful instantaneous settings of a sensor's parameters. So our tangible evidence is not always as precise or accurate as we would like it to be.

ACCURACY STORY

Look again at Evidence Story 1 where we had the possibility of cesium-137 being stolen by a terrorist organization in order to construct a dirty bomb. Suppose that we know in fact that it was cesium-137 that was stolen. A person with suspected terrorist associations has been apprehended. During the interview of this person, he was given what is called a "whole body count". This test allows us to detect gamma radiation given off by cesium-137. Traces of cesium-137 were found on his arms and hair. What is at issue is the accuracy of the reading resulting from this whole body count test. It is known that cesium-137 can enter the body in lots of innocent ways such as having accidental contact with radioactive waste in hospitals. Our suspect tells us that he works in a hospital. Was his whole body count level high enough, and accurately so, that we can rule out the traces of cesium-137 on him being the result of his accidental exposure to this substance?

COMPETENCE

Competence is characteristic that refers to human performance in a variety of tasks and situations. The major use of this term in Disciple-LTA concerns the persons who provide us with HUMINT based on observations of events they have allegedly made. In these situations the first question we ask is: did this person actually make the observation he claims to have made, or was he in a position to gain access to the information he reported? If this person did not make a claimed observation, or had no access to the information being reported, we have obvious grounds for suspecting that we are being misled by what this source tells us. The second major question we ask is: did this person understand what he observed well enough to provide us with an intelligible account of what he observed. If a source providing HUMINT provides an imprecise or confusing account of what was observed, we naturally wonder if this source really understood what he was observing. So, the competence of human sources of information rests basically on two main attributes: access and understanding. But some intelligence professionals add other attributes such as motivational consistency and general sensory or observational capabilities.

It is vital for intelligence analysts to distinguish between the competence and the **credibility** of human sources of evidence; they are not the same attributes. In fact, they involve entirely different questions and issues. Competence does not entail credibility and credibility does not entail competence. We have observed many instances of the following glaring non sequitur in intelligence reports. Someone will say: "This source had good access, so we can believe what this source is telling us". Such a conclusion invites all sorts of analytic errors. The source may have had wonderful access but is lying through his teeth about what he did observe. Human source credibility requires answers concerning the source's **veracity**, **objectivity**, and **observational sensitivity**. As you see, these are different questions than the competence questions involving access and understanding.

But we will encounter other instances in which human competence is an issue; these instances involve what is done to either **tangible** or **testimonial evidence** from the time such evidence is collected until it is provided for an intelligence analyst. In mentioning the **authenticity** of **tangible evidence**, we discussed the importance of the chain of custody through which an item passes. At each link in this chain of custody people might intervene in various ways in the processing of the evidence before it reaches the analyst. For example, someone must develop or process images of various kinds. Items of HUMINT might also go through various chains of custody involving translators, editors, and typists. So, we are also interested in the competence of these persons who may do various things to evidence before it reaches the intelligence analyst.

COMPETENCE STORY 1

Here is an asset named "Hardball" who provides us with a report on jihadist activities in the U.K. We know that Hardball has access to a number of imams in mosques in London who have repeatedly made threats to destroy British economic and cultural institutions, killing as many Westerners as they can. In the wake of the failure of the bombing attempts in London and Glasgow Airport in July, 2007, we are especially interested in the whereabouts of an imam named Tariq M. whom we know regularly attends the Finsbury Park mosque in London. Hardball says he was at this mosque last Friday and we ask him if Tariq M. was there at the time. Hardball tells us that Tariq M. was definitely not at this mosque last Friday. We know from another asset that Hardball was at this mosque last Friday; and we know that Hardball does know Tariq M. personally. Hardball tells us that Tariq M. left London for Pakistan two weeks ago and cannot have been in the Finsbury Park mosque last Friday. But just today we have a photo taken of Tariq M. entering the Finsbury Park mosque last Friday. So, what we have here is a

source, Hardball, who seems competent but not credible. He was either mistaken, not objective in his observations, or is lying to us about Tariq M.

COMPETENCE STORY 2

Your uncle Harold is a clergyman whose reputation for credibility is the envy of your entire community. He is known as being completely honest, objective, and utterly accurate in his observations. But suppose you have a neurological problem that seems quite serious. You would hardly consult uncle Harold about the causes and possible treatments for your problem, but would instead consult a neurologist whose competence you could rely upon. In fact, uncle Harold tells you himself that, though he would seek divine intervention on your behalf, you should by all means consult a competent neurologist. In Story 1 we have seen how competence does not entail credibility; in Story 2 we see that credibility does not entail competence.

VERACITY

Veracity is an attribute of the **credibility** of human sources of **testimonial evidence** who report on events they say they have observed. A good synonym for the term veracity is truthfulness. Is this human source being truthful in his report of an event or events of interest to us? In many past accounts of veracity it was said that a source is being truthful only if the event(s) he reported did actually occur. But this account is faulty because there are reasons other than untruthfulness that may involve a human source's credibility; we will explore these other reasons in a minute. What matters as far as the veracity or truthfulness of a human source is concerned is whether this source believes what he is reporting to us. This requires some explanation. If we believed the source was lying to us we would have to believe that he has deliberately told us something that was contrary to what he believes to be true. This source has either made up a story about what to tell us, or this source was told what to tell us by someone else. In this second case, the source may have no belief one way or the other about whether the events he reports occurred; he is simply relaying to us what others have said he should tell us. In either case, however, we have grounds for believing that we are being deceived by this source. In short, untruthfulness and deception go hand in hand.

Here is a source who tells us that he observed a certain event to have occurred. We later find out for sure that this event did not occur. Was this source necessarily lying to us? The answer is no, for the following reasons. This source may have believed that this event occurred, but formed this belief on the

basis of what he expected or wished to observe, regardless of what his senses told him. In short, this source was not an **objective** observer. Lack of objectivity is something that happens to all of us from time to time. Further, suppose this source was both truthful and objective. He has told us what he believes to have happened and he based this belief on the basis of sensory evidence he received. But the question now is: how good was this source's **observational sensitivity**? Perhaps this source was simply mistaken about what he observed, since his senses were either wrong or were being misled in some way. So, if a source tells us about the occurrence of an event that we later discover did not occur, this source was not necessarily being untruthful.

But how do we tell whether a source is being untruthful in what he now tells us? We cannot look inside this person's head to see what this person really believes about the event this person has just reported to us. We now tell a story about a source to see what kinds of things we can discover that will bear upon what this source believes and whether he is lying to us by telling us something he does not believe. In the intelligence community a human source suspected of lying is often referred to as a "fabricator".

VERACITY STORY

Suppose we have a source code-named "Apple" who gives us the following report. Apple says that on 23 July, 2007 at 10AM he saw the driver of the truck that carried the explosive charge that was set off in Baghdad at the intersection of Ar Rashid and Al Thawra Streets killing 25 people and causing great damage. The driver fled the scene soon before the explosion occurred. Apple identifies the driver as Abdul M, who he says is a Sunni Muslim he knew from Apple's past military service in Saddam Hussein's Republican Guards. How can we tell whether Apple believes what he has just told us?

1) Prior inconsistent statements. Suppose we learn from Major Hakim M., of the Iraqi police, that Apple told him, just after the incident, that it was Ahmed. M. who was the driver of the truck. But Apple now tells us that it was Abdul M. Which report that Apple has given is correct, if either one is correct? Apple has told two different stories about the same event. Which story does Apple believe, if he believes either one?

2) Apple's reputation for honesty. We discover that Apple has told several persons, including us, that he was a decorated member of Saddam's Republican Guards. But we learn from other sources that Apple was not a member of the Republican Guards and was never in fact in the Iraqi military.

3) Collateral details. What matters to us mostly is who drove the explosive-laden truck; was it Abdul M. or someone else? But Apple adds that Abdul M. was a Sunni Muslim. Suppose we find out that Abdul M. is a Shiite who comes from a devoted Shiite Muslim family. Does this cause us to question Apple's truthfulness about the identity of the truck's driver?

4) Contradiction. Suppose we have another source, code named "Twilight", who says she also observed the incident at 10AM on 23 July, 2007 at the intersection of Ar Rashid and Al Thawra Streets in Baghdad. She says the driver of the truck was a man named Rashid M. This contradicts what Apple has told us. We are, of course, equally concerned about Twilight's credibility, but what she tells us gives us a reason for questioning Apple's credibility including his veracity.

These are just some of the forms of evidence we could collect to assess Apple's veracity and to allow us to judge whether he believes what he is telling us; i.e. is Apple a fabricator? There are many other questions we could ask about Apple's veracity such as questions that involve his past track record in providing us with information. Have there been other instances in which we have had reason to question his truthfulness? One truth we must accept is that the veracity of any human source is both time-dependent and context-dependent. A human source may be truthful at one time but not at others, and may be truthful about certain matters but not about others.

OBJECTIVITY

Objectivity is an attribute of the **credibility** of sources of HUMINT and the **testimonial evidence** they provide based on observations they have made. The dictionary defines an objective observer as being one who bases her beliefs about what she observed on the basis of the sensory evidence she received rather than upon what she either expected to occur or wished to occur. Lack of complete objectivity characterizes all of us; we are never completely objective in our observations. It is not the case that our senses write on a blank mental tablet. Lots of things are already stored in our minds as we make observations of events in the world around us. What is already written on our mental tablets are our expectations about certain events and our preferences for observing the occurrence or nonoccurrence of certain events.

In intelligence-related matters, as in other contexts, it is vital to consider how objective our sources of HUMINT might have been during the observations they claim to have made. In so many past studies of the credibility of testimonial evidence objectivity was never even considered. This was quite a

mistake. A source of HUMINT might be entirely truthful about what he observed and has very good sensory capabilities, but the trouble is that this source did not take this sensory evidence into account in forming his beliefs. In this case, for example, he truthfully reported what he believed to have occurred but based this belief on what he wished to occur. All his good sensory capacity went for naught since he paid no attention to what his senses recorded.

OBJECTIVITY STORY

Let's change the Competence Story 1 where we asked Hardball if he had seen the imam Tariq M. at the Finsbury Park Mosque in London last Friday. Because we believe him to be associated with new terrorist activities in London, we wish to keep track of his whereabouts. So we ask Hardball if Tariq M. was at the Finsbury Park Mosque last Friday and Hardball says; "Yes he was there. He usually comes on Fridays to this mosque". A short time later we first have image evidence showing that Tariq M. was in Birmingham last Friday; we also have evidence that he stayed the whole day according to another source. So, we wonder whether Hardball so strongly expected to see Tariq M. last Friday at the Finsbury Park Mosque that he would believe he was there regardless of what his senses told him. After all, Hardball says that Tariq M. was "usually" there on Fridays.

OBSERVATIONAL SENSITIVITY

This is an attribute of the **credibility** of sources of HUMINT who provide **testimonial evidence** and who report on observations they have made. Our interest here goes well beyond simply asking how good was the eyesight and hearing of the source who just gave us a report. What is at issue as far as the credibility of this source is concerned is: what were the conditions in which this observation was made? This includes the ambient environmental conditions at the time of the observation, as well as the physical condition of the source. But it also concerns the duration of the observation and the level of attention given by the source during the observation. Finally, it includes any instructions given to the source before then observation was made. Here are examples of these matters about which we should be interested.

First, all the visual and auditory capabilities of the source will make little difference if the source made an observation under low levels of illumination or high levels of ambient noise. Second, these sensory capabilities would be reduced if the source was intoxicated or otherwise disabled at the time of the observation. Did the source only obtain a fleeting glance at the event he reports? Did he just hear

only a portion of the conversation he tells us about? What do we know about the level of attention the source was devoting to the events he claims to have observed. Finally, we might be concerned about what, if any, instructions were given to this source. What is at issue here concerns what is often called the instructional set under which the source may have made his observation. Here are three different kinds of instructions and how they might affect the source's observation.

First, suppose the source was simply told: go to location X and tell us what you observe. Second, suppose the source was told: go to location X and tell us who you see. Third, suppose the source was told: go to location X and tell us whether you see person Y. You can easily see how these different sets of instructions direct the source's attention in different ways. The first is not at all a specific instruction. In this case the source might direct his attention to an object, a person, or to anything he finds interesting. The second instruction directs the source to observe persons, but not any one person in particular. In this case, the source might provide us with a list of persons observed only some of which may be of interest to us. But the third instruction is very specific, we wish to know if person Y was at location X. In this case the source can devote full attention to observing whether Y was there; what else was happening may not be of concern to him.

OBSERVATIONAL SENSITIVITY STORY

First have a look at the **Believability** Story we told in which our asset Wallflower tells us he observed the Iraqi Emir Z. leaving a building in Ahwaz, Iran in which the Islamic Republican Guards Corps [IRGC] has offices. Our major concern here is whether we should suspect that Emir Z. is cooperating with IRGC in ways that are against our best interests in Iraq. Though Wallflower provides unequivocal **testimonial evidence** that he saw Emir Z., we begin to question him about the conditions under which he made this observation. Wallflower first tells us that he did not expect to see Emir Z., since we gave him no specific instructions to observe whether Emir Z. was at this location. In fact, we gave him no observational instructions at all. Asked about the conditions under which he made his observation of Emir Z., Wallflower said he was across the street from the IRGC building and he only got a fleeting glance at Emir Z. who left the building and immediately entered a vehicle that was parked in front of this building. Wallflower admitted that the traffic on the street was very heavy at the time which prevented him from getting a more careful look at Emir Z. Though Wallflower was sure he observed Emir Z. in this compromising location, we would be well advised to seek additional evidence about Emir Z.'s location at the time.

ANALYTIC ABILITY

In discussing **testimonial evidence** in HUMINT we provided three essential bases for it. The first we called direct observation in which the source claims to have observed the reported event at first-hand. In the second, involving secondhand or hearsay evidence, the source does not claim to have made a direct observation of the reported event but only heard about it from another source. In the third situation the source admits to observing other events from which she only inferred the occurrence of the reported event; this we called opinion evidence. In Disciple-LTA we use the term analytic ability with reference to the inferential capabilities of HUMINT sources who provide **testimonial evidence** in the form of an opinion or an inference. Here is what is involved in assessing opinion evidence.

Suppose a source of HUMINT reports the occurrence of event E that she says she has inferred from her observations of events B, C, and D. In deciding whether we should believe that event E occurred, we have several problems to deal with. The first concerns the **competence** and **credibility** of this source in her reports that events B, C, and D occurred. We recognize that this source may be more competent and credible about some of these events than she is about others. And, we remind ourselves that competence does not entail credibility any more than credibility entails competence. But then we have to ask ourselves whether the inference of event E, from the assumed occurrence of events B, C, and D, seems justified. We may ourselves reject the source's arguments that event E defensibly follows from events B, C, and D. In other words we are questioning this source's analytic ability.

ANALYTIC ABILITY STORY

In the various stories we have told to illustrate the concepts Disciple-LTA employs, all but one of the characters that appear in these stories are fictitious; the exception is Abu Ayub al-Masri. He is the real-life leader of the insurgent group in Iraq known as Al Qaeda in Mesopotamia. We have every reason for wanting to capture or eliminate this ruthless person. We have a source code-named "Bookend" who has just reported to us that Abu Ayub al-Masri will be at a meeting of members of Al Qaeda in Mesopotamia tomorrow morning in a camp near An Nukhayb in Iraq. An Nukhayb is approximately 175 km west from Karbala. Bookend bases this belief on three observations he has made. The first is that Bookend said he saw Abu Ayub al-Masri two days ago at Judaiat al Hamir, which is just 96 km southwest of An Nukhayb. The second is that he saw preparations being made yesterday in the rear of a shop in An Nukhayb for a gathering of persons Bookend recognized as being members of Al Qaeda in Mesopotamia. Third,

Bookend says he observed that two of the persons attending this meeting are members of Abu Ayub al-Masri's personal bodyguards.

Clearly, the analyst's task in assessing whether we can believe Bookend's inferential prediction that Abu Ayub al-Masri will be in An Nukhayb tomorrow morning involves assessing Bookend's competence and credibility regarding the three observations he says made. But the analyst's task is also to determine whether these three observed events licenses the prediction that Bookend has just made. We might recall that predictions about future events are always in the form of opinion evidence. The reason of course is that Bookend or anyone else cannot have observed events that have not yet happened.

3.0 IN CONCLUSION

We have just provided a variety of examples of the lessons or tutorials for important concepts encountered in analysts' use of Disciple-LTA, as well as stories illustrating the use of these concepts. We naturally hope that having these lessons and stories readily at hand will add to the effectiveness of the various enhancements that Disciple-LTA can provide analysts who must attempt to make sense out of masses of different kinds of evidence and that come to us from many different sources. This list of lessons and stories is by no means exhaustive. We anticipate the need for additions to this list as analysts gain further experience with Disciple-LTA and we provide increased capabilities to this system.

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