

Can Email Be Evidence for Adultery in Criminal Law Cases? A Philosophical and Legal Explication of the Court's Evaluation of Evidence through Inner Conviction

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ABSTRACT

Adultery in Taiwan's Criminal Law is defined as sexual intercourse between a married person and someone other than his/her spouse, however, a person cannot be accused of adultery unless substantial evidence of sexual intercourse is found. Until recently, electronically transmitted messages were not considered substantive proof of adultery, but new cases have acknowledged the validity of internet and MSN messages, representing a major change in the direction in Taiwan's legal practice. The question we raise here is whether internet messages should be considered substantial evidence in current legal principle and practice.

In an attempt to address this thorny question, we conduct an analysis of contemporary Taiwanese case law concerning adultery. This study is also aided by the

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application of probability theories of evidence in logical positivism to illustrate the legal status of internet evidence. Adopting this interdisciplinary approach, this paper aims to better illuminate the pressing problems of whether and how internet evidence can play a significant role in establishing adultery.

Keywords: Internet Crime, Criminal Law, Offense of Adultery, Evidence

BACKGROUND AND SIGNIFICANCE OF THIS RESEARCH

People spend increasing amounts of their time online. According to one study, people in Taiwan “used to spend 8 hours online every week, but in 2005 they averaged 19 hours, i.e., 2.7 hours every day...”[†] Given this large time investment, it can reasonably be inferred that the internet is increasingly being used as tool in the violation of laws, and in effect could serve as a source of evidence in criminal convictions. As Cathy T. H. Chen points out, “...crime caused directly or indirectly by internet has been one crucial form of criminal offense in Taiwan...” (Chen, 2006). However, the intricacies of internet evidence collection and the controversies of the legal status of internet evidence status have created major obstacles to clamping down various forms of internet criminal offenses (see also Chen, 2006). The present research aims to explore the obstacles in question by focusing on the offense of adultery, in order to shed light on the nature of internet evidence and the legal status it possesses in the criminal law.

It has been a general principle of criminal legal theory all over the world that a crime is established by evidence legitimately collected. Taiwan’s criminal procedure laws also stipulate that crime be established on the basis of evidentialism (art. 154): the concept of evidence is the core idea of criminal procedure. The interpretation of evidence consists in the judge’s free evaluation through inner conviction,, under the assumption of adhering to empirical and theoretical laws (art. 151.01 of criminal procedure law). In the case of adultery, whether the collected evidence indicates sexual intercourse depends on the judge’s free evaluation of the case through inner conviction. In the majority of adultery cases in Taiwan, the judge has evaluated the evidence in the traditional way, e.g., finding evidence involving bodily fluid. Recently, with increasing internet use amongst the general public, a significant number of adultery convictions in Taiwan have involved using internet messages as substantive evidence. This trend shows that electronic

[†] <http://emarketing.yam.com/time.html> · first day of browsing : 2007/9/21. Note that this website no longer exists by the time this paper is finished.

evidence has gradually come to be recognized as a solid form of evidence when a judge makes an evaluation through inner conviction. However, the question of whether internet messages constitute substantial evidence remains to be answered by current theories of law. For this purpose, this research aims to argue for the following two points:

1. Electronic evidence is much less reliable than material evidence.
2. The offense of adultery cannot be established merely by electronic evidence; it can serve as supporting evidence to material evidence.

STRUCTURE, SCOPE AND METHODOLOGY OF THIS RESEARCH

The main purpose of this research is the exploration of the proving force of evidence for adultery. We attempt to justify our two major claims by means of offering argumentations and illuminations from the literature of law and analytic philosophy. This paper will be structured around two related themes: examining the proving force of electronic evidence, and arguing for the priority of material evidence over electronic evidence in the case of adultery.

Given this structural setup, the scope of this research is confined to the interrelated issues of evidence for adultery and of the judge's evaluation of evidence through inner conviction. Thus, some of the less relevant legal principle of evidence in criminal procedure will not be discussed here: offenses indictable only upon complaint, and art. 239 in the criminal procedure law which stipulates that the withdrawal of complaint by the spouse of the adulterer have no effect on the other adulterer. However, the hearsay rule of indirect evidence is related to the discussion of internet evidence, and will be touched upon in what follows.

In evaluating our claims, we consider the latest legal empirical study in Taiwan, based on an analysis of the precedents from 2006 to 2008,,supplemented with the explicatory tools of logical positivism in analytic philosophy. The purpose of taking this interdisciplinary approach is the realization that conducting a purely conceptual and legal analysis without empirical inquiry is empty, and also that the mere accumulation of empirical data without suitable conceptual analysis is blind. By taking the approach where the traditional legal analysis is combined with empirical studies and positivist methodology, we hope to offer compelling reasons for the claims that internet messages are unreliable evidence and accordingly that material evidence is indispensable for adultery cases.

PRECEDENTS OF ADULTERY IN TAIWAN

Three conditions are required for adultery: i) one or both adulterers are married; ii) the alleged adulterers have sexual intercourse; and iii) there exists evidence for sexual intercourse. The first condition can be easily verified through legal documentation. In contrast, the second and third conditions raise serious questions. For instance, what constitutes “sexual intercourse”, and what is considered “evidence for sexual intercourse”. Consequently, the fulfillments of these conditions are of considerable controversy.

Prior rulings of adultery cases in Taiwanese criminal law defined sexual intercourse as a union of both parties’ sexual organs. This definition was eventually discarded as being overly narrow, and has been revised to define sexual intercourse more broadly, as “the insertion of one’s sex organ into another’s sex organ, anus, or mouth, as well as the insertion of any bodily part, or one’s use of any utensil, into another’s sex organ or anus” (art.10.5 of criminal law). The new definition of sexual intercourse has led to rulings qualifying oral sex as a form of adultery (Law Case No182/chain shang-93, Kaohsiung District Court). However, the broader definition has not been interpreted to include behaviors such as hugging, caressing, holding or merely sleeping in the same bed (Law Case No 163/yi-88, Tainan District Court; Law Case No 2444/yi-89, Tainan District Court).

For adultery to be confirmed, it is required that evidence for sexual intercourse (as currently understood) be collected. Current theories of evidence in criminal procedure laws distinguish between the type and content of evidence. The type of evidence refers to distinguishable categories such as a witness, material evidence, or documentary evidence. The latter means the content of the classified evidence, such as the testimony of witness, or the shape and property of material evidence (Huang, 2007). Evidence should be legitimately collected. If not, it fails to satisfy the qualifications required by criminal laws, and should be dismissed. There have been cases in which evidence for adultery was collected using a secret recorder or hidden camera. Evidence of this kind was dismissed as invalid in legal practice (Law Case No 2456/yi-94, Taichung District Court).

In the past few years, adultery was established based on material evidence provided by the accuser such as photos or tissue paper stained with the bodily fluid of one or both adulterers. Evidence of this substantial form is regarded as powerful and is widely accepted in case law. For example:

“a package of used tissue paper collected...” (Law Case No182/chain shang-93, Kaohsiung District Court; Law Case No14/cheng zai-93, Kaohsiung District Court); “a ball of tissue paper left on the scene...” (Law Case No 2456/yi-94, Taichung District Court); “tissue paper left in the bathroom of the master bedroom collected...” (Law Case No1375/yi-95, Kaohsiung District Court); “used condom and tissue paper collected...” (Law Case No95-/yi-1375, Kaohsiung District Court).

In the above cases, the judges based their evaluation upon evidence left by the adulterer(s) on the scene such as tissue paper, bodily fluid, or condom.

Even though such material evidence has been traditionally taken as a major source of evidence for adultery, it has been gradually acknowledged that, in practice, additional supporting evidence may be needed. The main reasons are that bodily fluids may be fabricated, and that collecting this kind of evidence usually can only be done in private places, which renders the task of evidence collection difficult. As the following precedent shows:

“Although the best evidence for adultery is ‘being caught red-handed’, it is difficult to catch the adulterers on the spot because usually they commit adultery in secret places. Therefore, to establish adultery, we should evaluate as much evidence as we can collect, and make the final judgment by our social experience...; still, the evidence we have at hand, the tissue paper and photos, have proving force...” (Law Case No 10/chain shang-92, Taipei District Court).

Typically, supporting evidence has come from videotapes. However, the potential violation of privacy rights make this type of evidence highly suspect in court, as the means of collecting it are often themselves illegal. The case law indicates that evidence collected by such means as setting up wire-tap in a private space for the purpose of collecting evidence is dismissed on the ground that human rights were violated (Law Case No 2456/yi-94, Taichung District Court).

Given that collecting evidence for adultery is difficult because of its secrecy (Law Case No 10/chain shang-92, Taipei District Court), and given the requirement that evidence collection be done through legal procedures (Law Case No 2456/yi-94, Taichung District Court), a tension naturally arises between obtaining sufficient evidence to make an adultery conviction and the collection of that evidence in accordance with human rights.. In recent years, this tension is increasingly being resolved by relying on computer and cell phone messages in the confirmation and conviction of adultery. This is not surprising, given the rapid incorporation of communication technology in people’s daily lives, and the perceived preservation of privacy rights in employing this type of

evidence. Compared to traditional evidence obtained by intruding into private homes, or secretly setting up videotaping equipment, obtaining electronic evidence can seem less intrusive.. A spouse, when collecting electronic evidence such as email, MSN, or cell-phone messages, may claim that such evidence is found accidentally. Nonetheless, it is up to the judge, through his or her inner conviction, to assess whether privacy rights were respected in gathering evidence of this type.

The cases involving adultery conviction based on internet evidence in recent years can be classified into two main categories: a conviction of adultery is based on electronic communication alone or it is used as a form of supporting evidence. In the majority of cases, electronic communication was considered as supporting evidence. However, two recent cases made a significant shift from legal precedent, and accepted electronic messages as primary evidence of adultery.

Of these two cases, the first does not clearly specify why internet evidence is sufficient for an adultery conviction. In the second case, the reasoning provided is brief. The ruling states that “even though internet evidence is easy to fabricate, no evidence is found to support the fact of fabrication” (Law Case No1167-/yi-96, Shihlin District Court). Based on the limited nature of the judge’s comments, it is difficult to lay out a systematic procedure to evaluate whether internet evidence can be considered substantive evidence in establishing an adultery conviction.

In contrast, the majority of cases have only used internet evidence to support other primary evidence. In one example, when an accused person had first confessed to committing adultery and then later denied it, internet evidence was used to prove the fact of adultery:

...the cell phone possessed by the accused, its phone number being OOOO, received a message from the man O on 94/4/26. The message reads: ‘...yesterday our sacred union...eyes closed, you were so distant and aloof from me, yet more amorous than ever, which made me firmly believe in the so-called ‘last night’.’ (Law Case No95-/yi-1703, Banciao District Court).

Similar precedents also include the following: Law Case No703/yi-96, Taipei District Court.

In other cases, electronic communications such as the availability of cell-phone pictures and electronic records of hotel stays are used to support the conviction of adultery:

“...investigation results: 17 pictures from cell phone, communications via Chunghwa, and record of check-in in Songhe Motel in Taoyuan County...” (Law Case No93-/yi-524, Banciao District

Court).

Similar cases can also be found (Law Case No233-/chain shang-96; Kaousiung District Court, Law Case No1334/yi-95, Taichung District Court).

As the two different treatments of electronic communication reveal, the trend in Taiwan is to recognize internet and cell-phone messages as a legitimate form of evidence in criminal judgments. Judges' free evaluation of evidence through inner conviction in the past few years corresponds to this trend. Nevertheless, conviction of adultery on the pure basis of internet evidence rarely happens. Most precedents deemed internet evidence as a part of evidence for the establishment of a fact about adultery. In the next section, we attempt to conduct a legal analysis of internet evidence, to show that the proving force of internet evidence is low, compared with that of substantial evidence.

LITERATURE DISCUSSION

There have been extensive discussions on material evidence in the literature of law, but very little on internet evidence, except some chapters on cyber crime in criminal law which merely stipulate that cyber messages, as one form of material evidence, belong to the category of documentation (see Chen, 2006). This section addresses this crucial issue concerning the proving force of substantial evidence (such as tissue paper of bodily fluid and photos) and that of electronic evidence (like internet messages). In section 4.1, the concepts of material and internet evidence in the criminal procedure law are explicated, such that the legal status of internet evidence for the conviction of adultery can be better clarified and determined. In section 4.2, the status of internet evidence is further illuminated with the aid of some analytic tools from the philosophical school of logical positivism. We conclude that the status of internet evidence is at best a form of supporting evidence.

Concepts of Material Evidence in the Criminal Procedure Law

1. "Evidence Rule" in Taiwan's Criminal Procedure Theory of Law

In Taiwan's criminal procedure law, evidence is defined by the "evidence rule" as a necessary condition for the establishment of a crime. It implies that whenever there is a crime, there is evidence for it (art. 154 of criminal procedure law). Correlatively, evidence which is hard to collect, or which involves violation of human rights, is mostly regarded as devoid of proving force (art. 158.4 of criminal procedure law). In accordance with the evidence rule, the following precedent states:

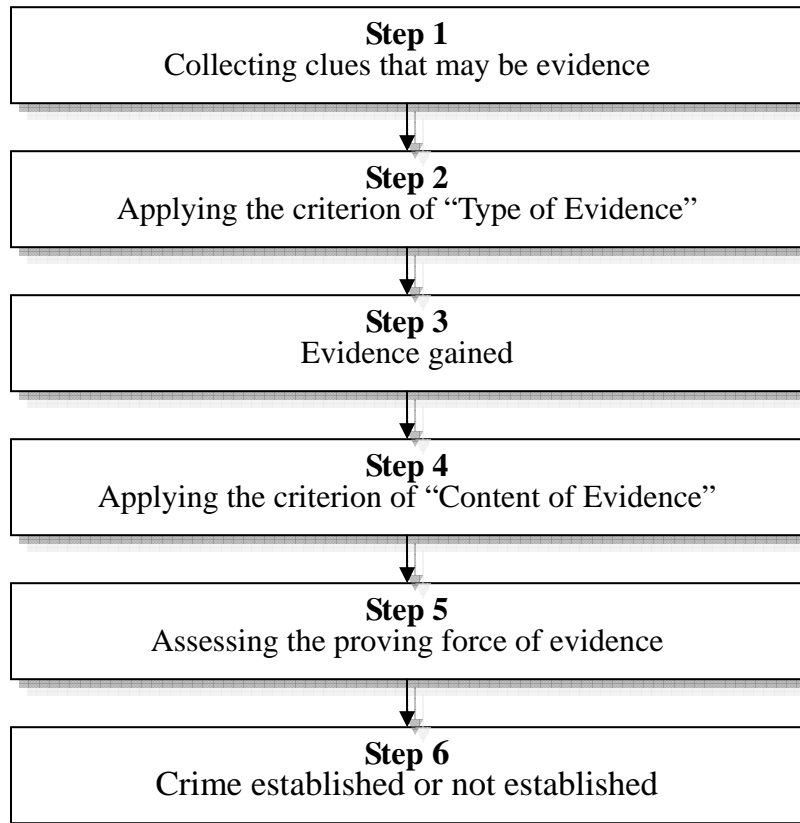
“positive evidence should be produced against the defendant...if no such evidence is produced or the evidence lacks proving force, the crime cannot be established on the basis of guess or fiction”

(Law Case No816/tai shang-30、No86/tai shang-30、No86/tai shang-40, Supreme Court).

To better illustrate the procedure of evidence collection in Taiwan’s criminal procedure law, see Table 1:

Table 1. Procedure of Evidence Collection in Taiwan’s Criminal Procedure Law (Lin, 2001)

- Step 1: Collecting clues that may be evidence (art.279.1 of criminal procedure law)
- Step 2: Applying the criterion of “Type of Evidence”
- Step 3: Evidence gained (art.155.11 of criminal procedure law)
- Step 4: Applying the criterion of “Content of Evidence”
- Step 5: Assessing the proving force of evidence (art.155.1 of criminal procedure law)
- Step 6: Crime established or not established



The criminal procedure law requires that the judge's free evaluation of evidence through inner conviction for adultery follows the evidence rule. According to the evidence rule, it is clear that the proving force of evidence means the substantial proving value of evidence, that is, evidence serves to establish some alleged fact, on the basis of its credibility. That evidence enjoys proving force, which it obtains through certain investigation procedures, is the premise of the judge's evaluation through inner conviction (Huang, 2007).

The widespread use of internet technology and its greater saturation in everyday life has led to the current legal practice where crime conviction depends increasingly on electronic evidence. However, only a few instances of cyber crime, such as computer hacking, are established directly and objectively by internet evidence. As our empirical analysis of adultery cases in Taiwan showed, the judges followed the spirit of the evidence rule closely, and tended to employ electronic evidence at most as indirect

evidence (Law Case No524/yi-93, Banciao District Court; Law Case No1334/yi-95, Taichung District Court; Law Case No1703/yi-95, Banciao District Court; Law Case No233-/chain shang-96, Kaousiung District Court; Law Case No1167-/yi-96, Shihlin District Court). Thus, when judges engaged themselves in evaluation through inner conviction, they predominately deemed electronic evidence as less than reliable, compared with material evidence. This pattern of judgments reveals a cautious attitude toward the proving force of electronic evidence: that it differs substantially from material evidence. Thus, from an empirical and practical point of view, internet evidence has a lower status than traditional evidence in the judge's evaluation of adultery through inner conviction.

2. *Proving Force of Internet Evidence*

The evidence rule requires that evidence collection be done through legal procedure and that material evidence be complete, accurate and concrete. In the case of adultery, the criteria for the interpretation of traditional evidence, such as tissue paper or bodily fluid, are based on the accuracy report of evidence made by an institution (e.g., investigation bureau or hospitals) commissioned by the court.

Internet evidence does not carry this same degree of proving force. While clinical examinations of traditional evidence by professional institutions can show whether that evidence comes from the defendant, no such examination can be applied to internet evidence. As Chen (2003) points out, "it cannot be certain that an internet message comes from the defendant...nowadays hackers are everywhere and they commit crime in the name of other people. If internet evidence is to be resorted to, it can only be employed as indirect supporting evidence because of its weaker credibility." Compared with traditional evidence, the proving force of internet messages is less powerful, given that it can be transferred, duplicated, and counterfeited. The nature of electronic evidence makes it easy to manipulate, either by alterations, forgery, or destruction. As Peter Sommer (1998) wrote, "...the problems arise from the fragility and transience of many of the forms of computer evidence, the fact that provenance may be difficult to understand and the speed with which computer technology, and hence the evidence potentially available, changes." Such arguments support judges' conservative conviction of adultery based on internet evidence.

Thus, to best respect the spirit of evidence rule in the criminal law, internet evidence should at best qualify as indirect evidence for the purpose of supporting substantial evidence. Substantial evidence, such as the defendant's confession or other types of

material evidence, is required to confirm adultery.

3. *Acceptance of Internet Evidence in Criminal Suits*

The above discussion, by focusing on the concept of evidence in the code of criminal procedure in Taiwan, has shown that internet evidence is liable to be forged, compared with traditional evidence. In general, it is risky to adopt internet evidence (Ciao, 2006). Internet evidence on digital devices such as computers can be easily altered, and it demands professional skills to discern such change. The method of assessing traditional evidence does not work in the same way (Azumi, 1994). There have been well established criminal procedures that are highly specialized to measure the proving force of material evidence. In contrast, countries adopting Continental Law and countries adopting Anglo-American Law (Common Law) have offered different interpretations and perspectives on internet evidence, which generates ambiguity and controversy over the proving force of internet evidence.

Both civil and common law jurisdictions accept the theory of criminal procedure which assimilates internet evidence to hearsay evidence. Hearsay rule originated from Anglo-American Law, and was later widely adopted by Continental Law countries. Consequently, construal of hearsay evidence does not vary much between legal traditions on both sides. The main gist of hearsay evidence is that a statement made outside the trial by a witness who has not been cross-examined or has not made any oath on anything should not be taken as evidence, unless the judge permits the use of it on the basis of his or her experiences (Carnen, 1991). However, as hearsay evidence, internet evidence has received different interpretations in Continental Law countries and Common Law countries.

In Common Law countries, such as the United States, the court has different perspectives on e-mail messages and electromagnetic records, respectively. In the U.S, the court regards the former as hearsay evidence, as was shown in the judgment of *United States v. Ferber* (Givens, 2004), but treats the latter as an exception of hearsay evidence, on the basis of Rule 803 (6) of the U.S. Federal Rules of Evidence. For references, see the following cases: *United States v. Salgado & United States v. Cestnik*; *United States v. Goodchild*; *United States v. Moor*, *United States v. Briscoe*; *United States v. Catabran* (*United States v. Salgado*, 250 F. 3d 438, 452 (6th Cir. 2001); *United States v. Cestnik*, 36 F. 3d 904 (10th Cir. 1994); *United States v. Goodchild*, 25 F 3d 55 (1st Cir.1994); *United States v Moore*, 923 F.2d 910 (1st Cir. 1991); *United States v. Briscoe*, 896 F. 2d 1476 (7th Cir. 1990), cited from Ciao, 2007). Although electromagnetic evidence is seen as an

exception to hearsay evidence in the above cases *United States v. Fernandez-Roque* held that electromagnetic evidence can be accepted only after cross-examination is done in court (*United States v. Fernandez-Roque*, 703 F. 2d 808, 812 n.2, 5th Cir. 1983, cited from Ciao, 2007).

Japanese and Taiwanese legal theorists of criminal procedure have expressed agreements with the above view (Azumi, 1990; Wang, 2003). In these Continental Law countries, though internet evidence is viewed as hearsay evidence, the procedure that supports it as a form of traditional evidence has been stipulated in laws. For example, it is stipulated, in the constitutional law and code of criminal procedure in Japan, that the proving force of hearsay evidence be accepted only after the cross-examination of the evidence is done in court (Hukui, 1997; Tamiya, 1996; Takada, 1984). Taiwanese legal experts hold a similar view (Wang, 2003). In 2003, Act. 165-1-2 Code of Criminal Procedure of Taiwan was amended to include the specific procedure of dealing with electromagnetic evidence. It was stipulated that electromagnetic evidence be seen as a “quasi-document”. However, the concept and status of quasi-document remains debatable. The controversy is concerned with the issue of whether the proving force of such evidence, *qua* documentary evidence, can be obtained by directly reading aloud its content in court, or the proving force of such evidence when its content is read aloud in court can be obtained only after certain investigation procedures have been undertaken. In Germany, different specific procedures of investigating electromagnetic evidence and internet evidence respectively have been stipulated (act. 255a-2 in the code of criminal procedure; Meyer-Gossner, stPO, 46. Aufl., §86 Rn 10 ; KK-Diemer, StPO, 5. Aufl., §249 Rn23. (see He, 2004). However, no such specific procedures of investigation are provided in Taiwan.

To sum up, countries of the Common Law tradition such as the United States adopt a very strict regulation toward the use of internet evidence: it is a form of hearsay evidence, which does not possess any proving force, with very rare exceptions. In contrast, countries of the Continental Law tradition such as Germany adopt a more flexible regulation toward the use of internet evidence. Nonetheless, specific and clear procedures of investigation of internet evidence as well as electromagnetic evidence have been specified and provided in German law. In comparison, Japan and Taiwan are more ambivalent toward the status and use of internet evidence. They appear to show sympathy with policy of the United States to treat internet evidence as a form of hearsay evidence, which enjoys little proving force unless some strong evidence can be provided to support

exceptions being made. Meanwhile, however, they also part with Germany, to positively view internet evidence as employable under certain conditions, without explicitly specifying what those conditions are. The current seemingly awkward situation of Japan and Taiwan is, according to our hypothesis, caused by the recognition of the increasing indispensability of internet evidence and of the fact that the issue of how to use internet evidence properly in the conviction of crime is simply too complex to be adequately and well addressed. This is a clear indicator that internet evidence should serve at most as indirect evidence for adultery, due to its weak credibility. In the remaining section, we explicate the same point from a positivist philosophical perspective.

The Notion of Evidence from the Logical Positivist Perspective

1. Some Background of Confirmation Theory

When does evidence support a hypothesis or theory? This question is central to confirmation theory, and has been raised in many debates in the history of philosophy. Positivists have formulated rigorous and systematic ways of dealing with this question. They view philosophy as “the logic of science,” and take it to be a major task of philosophy to provide explications for scientific concepts. In general, the relationship between evidence and hypothesis is one of the widely discussed issues. Among the positivists, Carnap (1950) advocates a view of evidence in favor of the quantitative concept, i.e., interpreting evidence in terms of probability. This thesis was continued and developed by the Bayesians, who founded contemporary confirmation theory. Bayesianism still dominates contemporary confirmation theory and has been highly influential.

A typical example of the Bayesian influence on forensic science is the work of Bernard Robertson and G. A. Vignaux in their book *Interpreting Evidence: Evaluating Forensic Science in the Courtroom* (1995), who advocate a Bayesian approach of interpreting criminal evidence. Since the theoretical foundation of Bayesianism was laid down by Carnap, the following discussion will center on Carnap’s core idea of evidence. This idea represents the spirit of contemporary Bayesianism, which exerts great influence on many empirical fields. For the purpose of this paper, it suffices that we use some key concepts in Carnap’s confirmation theory to illustrate the status of internet evidence in the legal practice.

2. Carnap’s View of Evidence

Carnap distinguishes three concepts of evidence: quantitative, classificatory, and

comparative (Carnap, 1962). The first is employed in showing the degree to which a given piece of evidence supports a hypothesis: Hypothesis h is confirmed by evidence e to degree r . For instance, we can use “90%” to represent the quantitative degree to which the evidence of fingerprints on the murderous weapon supports the hypothesis that A is the murderer. This statement can be symbolized as $p(h/e)=0.9$. The classificatory concept is employed in determining in a yes/no fashion whether a given piece of evidence confirms a hypothesis. Using a comparative concept, the aim is to determine whether the proving force of one given piece of evidence is stronger than another for a hypothesis. For example, for hypothesis h , if we have two pieces of evidence e_1 and e_2 , then we can compare the degree to which they support h .

Below we try to explain the legal status of internet evidence by applying the two probability theories of evidence—the quantitative and the comparative theories—within the classificatory conceptual framework. Such a framework suits the purpose of our present task. Our task is to find a way of formulating how (internet) evidence supports a (crime of adultery) hypothesis, which can be expressed as “ e is evidence for h if and only if c ”. Given this expression, we can answer the question of whether e supports h , by judging whether c holds or not, and this is exactly of a Yes/No classificatory format. Both probability theories in question can be formulated within this framework, which will thus facilitate our illustration of the legal status of internet evidence in each probability theory.

The first theory, increase-in-probability theory, has a basic claim: a piece of information is evidence for some hypothesis iff the probability of the hypothesis on that information is greater than without it. This is shown in (1):

- (1) e is evidence for h , given b , iff $p(h/e\&b) > p(h/b)$, where b stands for some background information.

Formulation (1) states the basic thesis of contemporary Bayesianism. The implication of (1) is that if e_1 is stronger evidence than e_2 , then e_1 increases h 's probability more than e_2 does. This is shown in (2):

- (2) Where e_1 and e_2 are both evidence for h , given b , e_1 is stronger evidence than is e_2 iff $p(h/e_1\&b) - p(h/b) > p(h/e_2\&b) - p(h/b)$.

Formulation (2) describes Carnap's condition of “ h is made firmer by e_1 more than

by e_2 .” Furthermore, (2) is equivalent to (3):

- (3) Where e_1 and e_2 are both evidence for h , given b , e_1 is stronger evidence than is e_2 iff $p(h/e_1 \& b) > p(h/e_2 \& b)$.

On the other hand, the second theory, high-probability theory, defines evidence by appeal to the notion of high probability:

- (4) e is evidence for h , given b , iff $p(h/e \& b) > k$, where k stands for some threshold of high probability.

That is to say, for e to be evidence for h , the value of $p(h/e \& b)$ has to be higher than some given threshold, e.g. 1/2.

3. *Examination of Internet Evidence*‡ *by Two Classificatory Theories*

Our working assumption is that, given its nature, internet evidence is much less reliable than material evidence, as expressed by P:

(P): Internet evidence has a much weaker credibility than material evidence.

Under this premise, we now compare internet evidence with substantial evidence using the above two probability theories. First consider the increase-in-probability theory. Suppose that e_1 is material evidence and e_2 internet evidence. Then compare them by (3). Obviously, the result is $p(h/e_1 \& b) > p(h/e_2 \& b)$, i.e. the hypothesis is made firmer by e_1 than by e_2 . In other words, material evidence bears stronger proving force than internet evidence.

However, interpreting internet evidence by (3) presupposes its legitimacy and power of supporting the given hypothesis, despite its weaker proving force. If we examine internet evidence by (1), our intuition will be that, supported by internet evidence, a given hypothesis is more likely to be true than without the support, even if the support is merely of low credibility. Thus if interpreted by increase-in-probability theory, internet evidence can be evidence for a given hypothesis, despite the weaker credibility it has compared to material evidence. The status of internet evidence can only be such that it is used in

‡ In this paper we are not strict with the terminology. We use computer, electronic or internet evidence to designate any evidence in the electronic form. Here we are concerned mainly with internet messages or cell phone messages.

support of material evidence. On its own, internet evidence cannot establish a crime fact.

Now we turn to the high-probability theory. In this theory, to qualify as evidence for a given hypothesis, it is required that the value of $p(h/e\&b)$ be higher than some threshold. Given (P), two possibilities follow:

(a) The value of $p(h/e\&b)$ is lower than the threshold.

Such being the case, internet evidence fails to be evidence for h , because by (4) if $p(h/e\&b) < k$, then e fails to support h . Put another way, in judging the truth value of h , internet evidence is irrelevant.

(b) The value of $p(h/e\&b)$ is higher than the threshold.

In this situation, internet evidence can be evidence for h . But by (P), it will be highly risky if we judge solely on the basis of internet evidence, even though its probability of supporting a hypothesis appears high. This is a tricky point, and needs to be carefully addressed. Our position is that, given the relative ease of fabricating internet evidence, even though there may be occasions where its supporting probability passes a certain threshold, it cannot function as a primary and independent source of evidence to support a crime hypothesis. Internet evidence can be used as supporting evidence, only when material evidence is available.

These probabilistic theories of evidence illustrate how internet evidence should function as evidence for establishing a crime of adultery: internet evidence is at best a form of supporting evidence, and at worst not evidence at all.

CONCLUSION

Our discussions started with an examination of legal precedents with the observation that the judge's free evaluation of evidence through inner conviction for adultery was mainly based on concrete evidence such as tissue paper of bodily fluid or photos. The precedents also show an increasing respect for human rights: evidence collection involving intrusion of privacy has been typically dismissed as illegitimate. This growing awareness of human rights has resulted in the tendency of the judges to use evidence of whatever types available with more caution than before. The consequence is that establishing the offense of adultery has become exceedingly difficult, given that adultery is usually carefully concealed. As the information society has arrived, many precedents in the past three years reflect the trend that adultery can be established by the supplementation of electronic evidence such as messages from cell-phone or internet. In

some rare cases, adultery was convicted entirely on the basis of electronic evidence. This shows a major transformation in the concept of evidence in moving from the material world to the virtual sphere.

However, a close examination of internet evidence shows that this kind of evidence, by its nature, is liable to be altered, forged, or destroyed, compared to material evidence. Electronic evidence could be easily denied if there were no specific and specialized legal procedures to justify its legitimacy. One of the two main claims made in this paper, namely, that electronic evidence is less reliable than substantial evidence is thus supported. Moreover, the great difficulties which different countries from different legal traditions have encountered and the diversities which their legal policies have exhibited concerning the construal of internet evidence suggests that internet evidence possesses a much weaker form of proving force than material evidence. This supports the second claim of this paper that internet evidence may serve as supporting evidence for establishing a crime of adultery, but no more than that. The formulations of probability theories in logical positivism help illustrate the point that internet evidence is either irrelevant, or serves as supporting evidence only when material evidence is available in the conviction of adultery.

However, though employing internet evidence in the legal practice bears risks, it will gradually weigh more than it has been traditionally treated; at some point in the future, it may become common practice that electronic evidence of various sorts weighs more than traditional material evidence when establishing a crime. After all, various forms of crime emerge rapidly, thanks to increasing penetration of the internet into almost every aspect of our lives. Making clear the nature and defects of electronic messages and how it may function as a form of evidence in court helps disclose a major challenge for the future criminal and legal researches, that is, how to render the judge's free evaluation of electronic evidence through inner conviction appropriate and reliable in the use of electronic evidence. The present paper only makes an initial attempt to tackle this intriguing and pressing problem. Much work remains to be done in the future.

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