



# GEORGIA FORENSIC NEWS



*The International Association for Identification, Georgia State Division's Official Quarterly Newsletter*

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JUNE, 2002

## **Distortion Versus Dissimilarity in Friction Skin Identification**

By

**William F. Leo, C.L.P.E.**

For many years, the premise has been accepted in the field of friction skin identification that in order to have a valid identification, the print in question must be void of any dissimilarities. This information has been documented in a number of classic texts on friction skin identification. (1,2) However, this information only partially addresses the issue of dissimilarities. This important fact is rarely addressed in literature on fingerprint identification. The first question that needs to be explored is, what is a dissimilarity? Webster's New World Dictionary defines dissimilar as: "absence of similarity; no being the same; different". This differs from distortion which is defined as: "to modify so to produce an unlawful reproduction; to change or misrepresent; to change the usual or normal shape, form, or appearance." Based on these literal definitions, dissimilarities can only occur in prints that are not of the same origin. That is why during a latent print examiner's early training, he or she is taught that if a dissimilarity is found during the comparison, there is no an identification. Distortion, however, is commonly found in both latent and exemplar prints that have the same origin. Examples of distortion can be noted when occurring from any of the following conditions-overlaid prints, pressure reversals, background interference, slippage, or from any circumstance that would change or misrepresent the appearance or shape of one or both prints that are being compared. Dissimilarity and distortion

are not interchangeable terms and the two concepts should no be confused. The problem because of the oversimplification as to how and when a dissimilarity is possible as well as the confusion that exists with some traditional terminology, incorrect testimony concerning the identification of latent prints has resulted. For example, one confusing and ambiguous term sometimes used to describe distortion is the "explainable dissimilarity." This terminology can and has caused confusion among both latent print examiners and lay persons. I reviewed a court transcript from a murder trial where the attorney and a latent print examiner repeatedly interchanged and confused the terms distortion, similarity, dissimilarity, unexplainable dissimilarity, and explainable dissimilarity. At one point, the defense attorney stated, "What you are saying by calling it an explainable dissimilarity that the prints are different, but you have an excuse for it." The examiner replied, "Yes, that is correct." As a result, it became necessary to call in a latent print examiner from another agency to testify and support the identification.(3) In another case, the latent print examiner's failure to understand the concept of dissimilarities

In a disaster during a homicide trial in California. The latent print examiner was asked if a dissimilarity were to be found in the latent print that had already been identified, would that cancel or invalidate the identification? The examiner responded that regardless of how many similarities are present, if there was an unexplainable dissimilarity, there would not be an identification. The defense then called in their own "expert witness", two latent print examiners of questionable ethics, who pointed out areas of distortion in the prints referring to them as dissimilarities and testified that the prints were not the same. The defendant was found not guilty. The latent print evidence, a palm latent found on a piece of duct tape that was used to cover the nose and mouth of an elderly female burglary/murder victim was the key evidence in the trial.(4) The identification has been reviewed by a number of I.A.I. Certified Latent Print Examiners and was found to be valid. The incorrect concept that a dissimilarity is possible regardless of the number of similarities present has also been published in the text Crime Scene and Physical Evidence

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*Editors Message*  
David T. Leedahl

Dear Members,

As many of you may know, this will be the last newsletter that I will be putting together. Putting together a newsletter can be quite time consuming and I feel that I am cheating the members of the division of a good, quality newsletter. I am encountering an ever increasing demand for my time with my job, as well as my family. I have enjoyed the job as the editor of the Georgia Division of the International Association for Identification, and I am sure that I will miss it. I hope that I have met or exceeded your expectations. I tried to include articles from various forensic disciplines so that I would not alienate anyone.

The next issue of the Georgia Forensic News will be jointly constructed with Juliette Wood of the US Army Crime Lab. She has shown an interest in the position and I am sure she will do a great job with the newsletter. All I ask is that you give her the support that you all have given me. It is appreciated.

I must also thank several people who have helped me in my position: Duane Christenson helped me to get started and provided a lot of material and guidance for which I appreciate. I must also thank Lou Cuendet and

Shannon Hale for their assistance in providing me information necessary for the completion of the newsletter. I feel very strongly about this organization and its leadership and I will play an active role in the organization. I truly believe it is moving forward in a positive manner and meets the needs of the forensic community.

I encourage each member to help us to grow and prosper. Actively recruit new members, get involved in the committees, and attend the training and meetings. The networking with other mem-

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**Condolences**

Members of the Georgia Division of the International Association for Identification, wish to express our sympathy to the family of Ken Collins. Ken passed away from Cancer on April 18. Ken is a retired Crime Scene Tech from the GBI and was currently working for the Thomas County Sheriff's Office.

**UPCOMING MEETINGS**

June 28, 2002  
Commerce Civic Center  
Commerce, GA.

**2002 ANNAUL TRAINING CONFERENCE**

October 28-November 1, 2002  
Holiday Inn  
Athens, Georgia.

**E-MAIL ADDRESSES**

A reminder to all members, please forward a current e-mail address so that we can forward important information to you. E-mails can be sent to the following addresses:

Latentdoc@aol.com

**Publication Information**

The *Georgia Forensic News* is published quarterly on February 15, May 15, August 15 and November 15. Deadline for submissions is four weeks prior to publication. Submissions can be sent to the Editor at the address on the back of this newsletter. Any articles in this publication can be republished with credit given to the author. The Editor's daytime telephone number is (706)613-3337, ext. 316, and E-mail address: Latentdoc@aol.com.

**ADVERTISING**

The current Advertising fees are:

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Handbook. Discussion I would suggest the correct answer to a question referring to the possibility of dissimilarities in a print that has been identified to an individual should be the following: A dissimilarity would not and could not exist in this print because there is a sufficient number of matching characteristics to make an identification and dissimilarities only exist between two prints that are not the same. The concept that a dissimilarity could exist regardless of how many similarities are found cannot be valid. If this were possible, then there would always be a possibility of a dissimilarity and a conclusive identification could never be made.<sup>(6)</sup> Cowger makes the statements "determination of identity is based on the presence of similarities, not the absence of,"<sup>(7)</sup> Clements also states that if a sufficient number of matching characteristics are found to make an identification, the identification is valid regardless of distortion. The Federal Bureau of Investigation said it best in their article, Fingerprints Do Not Lie," when they refuted a defense expert's claim that a latent print containing fourteen matching characteristics and three dissimilarities, was not an identification. The article states, FBI fingerprint experts state unequivocally that any two fingerprints possessing as many as 14 identical ridge characteristics, the number which the defense expert acknowledged when he testified concerning the fingerprint in question, would certainly contain no dissimilarities in the ridge formation. "It would be a most unusual occurrence to make a comparison where a latent print possessed all the ridge characteristics present in the exemplar." Because of this, it is common for the defense attorneys to try and use this information as a defense strategy. For example:

Question: Is the latent print the

entire print as in the exemplars or is it just a partial?

Answer: It is a partial.

Question: So all the detail present in the exemplar is not present in the latent?

Answer: Yes, that is correct.

Question: So if a dissimilarity was present in the area outside the area depicted in the latent print, the area you can not see, then you would not have identification, would you?

Answer: This would not be possible. A print containing this many matching characteristics is an identification. When an identification is made, you are in fact saying that you found a sufficient number of matching characteristics present in the comparison to eliminate the possibility that anyone else could have been the donor of the latent print. To say it would be possible to still have dissimilarity is to say that there is insufficient detail to be certain of the identification.

**Conclusion**

Confusion exist among some latent print examiners who are interchanging the terms dissimilarities and distortion. Literature on friction skin identification rarely addresses the subject in any detail. The result of this confusion is a loss of credibility within the criminal justice system when latent print examiners cannot explain these concepts and defend their conclusions on the witness stand. Similarities are used to establish identity, whereas dissimilarities establish that two prints are not the same. Once sufficient matching characteristics are found to establish identity, dissimilarities cannot and will not be found. Dissimilarities only occur in prints that are not the same. Distortion alters the appearance of prints, sometimes interfering with the comparison. However, distortion is common in all prints regardless of whether or not they are one and the same. It is important that latent print examiners be trained and fully understand the concepts of similarities

and dissimilarities and how dissimilarities differ from distortion prior to giving testimony as expert witnesses in the field of friction skin identification.

**References.**

1. Moenssens, A. Fingerprint Techniques, Clinton Book Co. Philadelphia, 1971, pp 260-262.
2. Olsen R., Scotts Fingerprint Mechanics, Charles Thomas, Springfield, Il, 1978 p. 29.
3. California v. Joseph John Reyes Jr., Los Angeles Superior Court, Case# U A590802 1986.
4. California v. Vargas, Los Angeles Superior Court, Case# 887216, 1988.
5. Fox, R.H.: Cunningham, C.L., Crime Scene Search and Physical Evidence Handbook, U.S. Department of Justice, 1973, p.48.
6. Leo, W.F., Abstract on "Dissimilarities and Distortion in Friction Skin Identification," presented at the International Symposium on the Forensic Aspects of Latent Prints, FBI Academy, Quantico, VA, 1973.
7. Cowger, J., Friction Ridge Skin, Elsevier, New York, 1983, p.176.
8. Clements, W, The study of Latent fingerprints, Charles Thomas, Springfield, IL, 1987, pp11-113.
9. Federal Bureau of Investigation, "Fingerprints Do Not Lie," Law Enforcement Bulletin, September, 1969.

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**MINUTES**

**GEORGIA STATE DIVISION  
INTERNATIONAL ASSOCIATION FOR IDENTIFICATION  
General Meeting  
Riverdale, GA  
March 29, 2002**

The general meeting of the Georgia State Division of the International Association for Identification was called to order by President Shannon Hale at 9:10 a.m. March 29, 2002 at Riverdale, GA. Al Pryor offered a prayer.

President Shannon Hale presented a watch and plaque to Mrs. Mary Lee, Mayor of Riverdale, GA for her dedication to the Georgia State Division of the International Association for Identification. A plaque was also presented to the Chief of Police of Riverdale, GA. Cpt. Eason accepted the plaque in the Chief's absence. Mr. Billy Beckon, City Manager and Mr. Rick Seagan provided words of welcome for the city of Riverdale, GA.

A presentation on the World Trade Center Aftermath was presented by Cedric Hills, of Peoples Funeral Home and Michael Fowler of the Georgia Bureau of Investigation. Diane Ennis, GBI/Crime Lab provided a presentation on Child Abuse Investigations. Sgt. Steve Bolcomb, Atlanta Police Department provided a presentation on Homicide Investigations.

The business meeting was called to order by President Hale at 11:45 a.m. The secretary/treasurers report was called for. The minutes of the

past meeting were accepted. The financial report was given as of March 29, 2002 and accepted as read. The business meeting was adjourned at 12:25 p.m. for lunch.

Respectfully submitted:

Denise Williams  
Secretary-Treasurer.

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**Membership:**  
Chairperson-Pam Cooper

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**Hospitality Coordinator  
needed for fall conference in  
Athens.**

**If anyone is interested, contact**

**President Shannon Hale  
(404)244-2687**

**Or  
David Leedah (706)613-3337.**

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bers of the association will assist you in your work and of course the friendship is irreplaceable.

Terry Cooper, Todd Sartain and I are currently working on the Conference that will be held in Athens in October. Plans are being finalized with the Holiday Inn and will be discussed at the Summer meeting in Commerce. I encourage everyone to attend the conference, after all, don't we all need a break from the office.

The Georgia State Division is also hosting a Ridgeology Science Workshop, August 26-30, at the Clayton Regional Law Enforcement Academy. I have attend this course when it was taught by Pat Wertheim. Pat has turned the teaching over to his son Kasey, who has proven to be very knowledgeable and a leader in the field. I encourage everyone to attend this workshop as it is well worth the money.

The conference registration form will be included in the next issue, which will be mailed in the first part of August.

Again, thank you all for your support and assistance.

Sincerely,

David T. Leedah

SIRCHIE AD

**GEORGIA ASSOCIATION  
OF  
INTERNATIONAL ASSOCIATION FOR IDENTIFICATION**

**2002 SUMMER MEETING**

**JUNE 28, 2002  
8:30 AM**

**COMMERCE CIVIC CENTER  
110 STATE STREET  
COMMERCE, GA**

**HOSTED BY COMMERCE POLICE DEPARTMENT**

There will be a training session in the morning followed by lunch with business and board meetings in the afternoon.

Lunch will be provided compliments of Detective Chad Knight and the Commerce Police Department.

Contact Agent Terry Cooper at (706)542-7901 (GBI-Athens)  
Or  
Detective Chad Knight (706)335-3200.

Lunch will be catered by Log's Bar-B-Q.

**DIRECTIONS**

**FROM I-85:** Take one of two exits:

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- Have you ever been convicted of a crime?  Yes  No. (If yes, give full details on other side).
- I understand that application fees paid to the Association by any new applicant between January 1 and August 31 shall be applied to the membership dues for that calendar year only; fees paid by an applicant on or after September 1 shall be applied to the following calendar year.
- All applications MUST be accompanied by payment of Fees, which will be refunded if application is rejected. Incomplete Applications will be returned.
- Also, I understand that my Membership Certificate is the property of the Division and must be returned to the Secretary upon my *resignation or suspension*. Because this information will be used for compiling our Membership Directory, PLEASE be precise and complete ALL items.

### 5. PLEASE NUMBER UP TO THREE AREAS OF YOUR EXPERTISE

Indicate your primary discipline as Number 1, then others areas as 2 and 3.

_____.....Fingerprint Identification	_____.....Questioned Documents	_____.....Polygraph
_____.....Forensic Photography/ Electronic Imaging	_____.....Firearms & Toolmarks	_____.....Laboratory Analysis
_____.....Voice Print & Acoustics	_____.....Forensic Art	_____.....Crime Scene Invest.
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7. In what capacity? \_\_\_\_\_ How Long? \_\_\_\_\_

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Approved: \_\_\_\_\_  
Signature of Membership Committee Chairperson and Date

(OVER)

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**Degrees and /or Honors and other Qualifications for Membership**

**MEMBERSHIP QUALIFICATIONS**

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**ASSOCIATE MEMBERSHIP** All reputable persons wholly or partially engaged in any of the various phases of the science of identification, and who are not qualified for Active Membership. They shall, in all respects, be subject to the same rights and privileges as Active Members, except that they shall not be entitled to the office of Vice President or President.

12. I certify that the information herein contained is true and correct to the best of my knowledge. Any omission or falsification of information will be a basis for rejection or denial of continued membership.

Applicant's Signature and Date \_\_\_\_\_

## POROSCOPY AND EDGEOSCOPY

BY

Elizabeth Oliver CLPE

In 1973 the identification community in North America embraced a new standard for friction ridge identification. The static threshold identification ideology, where a set number of points were counted, was rejected. It was replaced with a floating threshold philosophy where an expert using three levels of detail evaluates the worth of the friction ridge formations. The first level of detail is ridge flow, which includes pattern type, ridge count and focal areas such as core, delta and orientation. Individualizations, or matching the print, cannot occur at this level. Level two is ridge path also known as Galton details, the commonly known "points". These include ridge endings, bifurcation's, dots, combinations of above and their relationship to one another. Individualization can occur at this level. Poroscopy and edgeoscopy both involve third level detail and are used by latent examiners on a regular basis, even without their conscious knowledge.

In fingerprint work Poroscopy is the term applied to a specialized study of pore structure found on the papillary ridges of the skin as a means of identification. Papillary skin contains an average of 2,700 sweat glands per square inch, and each gland opens through a duct onto the ridge surface. An opening at the ridge surface, called a pore, continuously excretes sweat. The skin on the palmer surfaces of the hands and the plantar surfaces of the feet are covered with ridges. These friction ridges begin to form on the human fetus during the third and fourth months of fetal life. The ridges begin as raised apertures around the pores and then join together into rows, forming the ridges. The pores may open anywhere across the ridge surface, but they are most often found near the midline. A pore near the edge is the exception. Pores may also

open on the skin surface apart from the ridges, with only a single raised aperture. A single pore appears as a dot in a fingerprint. In some instances, only two or three pore apertures may fuse together, forming a short ridge.

Poroscopy is a refinement of the science of identification by ridge characteristics. Pore structure of papillary skin is as uniquely characteristic of the skin as ridges, but due to the microscopic nature of the pores and the fact that they are not commonly reproduced by ordinary physical methods of development, their presence in an impression cannot be depended upon. They are seen in powdered images occasionally, but they are revealed in chemically developed images more often. Pore structure is most often seen in latent fingerprints developed using several chemical processes, two of which are ninhydrin and silver nitrate latent fingerprint techniques.

The science of poroscopy was established by Dr. Edmond Locard of Lyons, France in 1912. He began to study poroscopy as the result of a break-in and theft. A rosewood jewelry box, which had held the stolen jewelry, was found to be covered with fingerprints. Several latent prints were developed with carbonate of lead and photographed.

In the year 1912 friction ridge identification was in its infancy and still somewhat novel. The prints clearly illustrated relative pore location, Locard decided to compare them. After the pore locations were compared, one print was found to have 901 pores in the correct relative position when compared to the suspect. Another suspect's palm print had 2000 pores in agreement. This amount of third level detail had an enormous value toward individualization. Both men

were convicted.

The lack of interest in poroscopy has been blamed on its so-called shortcomings such as the low percentage of fingerprints displaying pore structure in the latent or inked forms, inadequate visual aids to examine pore structure, difficulty locating the pores to be compared, the degree of study required to gain expertise in poroscopy, and the time required to make the comparison. More likely the lack of interest was the level of understanding the experts of the day had concerning the identification process rather than any of poroscopy's shortcomings. In the last 20 years, crime scene processing techniques and fingerprint development advancements have made the study of third level detail mainstream among latent print examiners. To use poroscopy effectively it must be incorporated into an evaluative identification process. Poroscopy became one more link in the chain of available ridge formations if clarity permits. Edgeoscopy is a term applied to the study of the characteristics formed by the sides or edges of papillary ridges as a means of identification. Like poroscopy, edgeoscopy is an extension of identification by ridge characteristics, and these characteristics are generally, but not always, microscopic in nature. Papillary ridges are formed during fetal life. They begin as apertures around the pores and then join together into rows, forming ridges. These ridges have irregular edges and are as individualistic and unique as pore and ridge characteristics.

The term "edgeoscopy" was originally coined by Salil K. Chatterjee in a paper published in the *Fingerprint and Identification*, September 1962 issue, and republished in the

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second printing of his book, *Finger, Palm and Sole Prints*, in 1967. Chatterjee's original idea was to use ridge edges in concert with other friction ridge formations to establish individualization.

Chatterjee encountered some shapes on the friction ridge edges that tended to reappear frequently, so he gave them specific names. He used the following terms to describe the various characteristics encountered: 1. Straight edge; 2. Convex edge; 3. Peak-the edge protrudes and the protrusion has a broad base and pointed top; 4. Table-the edge has a protrusion with a narrow base and a broad flat top; 5. Pocket-the edge looks like a pocket with a narrow opening. This characteristic is formed by a single pore with one side not completely enclosed by the ridge; 6. Concave edge; 7. Angle; and 8. Infinite-any-other characteristics other than those mentioned about. Subsequent research into edgeoscopy has found that all characteristics encountered along the friction ridges can be placed into one of these categories.

Edgeoscopy is similar to poroscopy in that it may rarely be used as a basis for identification without being considered as an adjunct to ridge formations. The problem of having inked impressions of adequate quality for comparison and the difficult task of comparing so many possible characteristics make edgeoscopy impractical as the sole means of identification. Considering the difficulties that may be expected in development techniques and pressure distortion, the possible applications of edgeoscopy are extremely limited. There is no publicized case of an actual identification based on edgeoscopy alone. However, as previously stated, any characteristic which appears in more than one print made by the same finger may be used to establish identification.

People all over the world mentally carry out the identification process in exactly the same way. The ability to identify patterns and shapes as a natural process instinctive to the human brain, like when you scan a crowd to see if you know anyone. This process corresponds to the way in which we see and identify objects every day of our lives. Any identification process must mimic as closely as possible the brain's natural approach to this task. Most any examiner will tell you that when comparing prints they often just "see" an area and they know they have a match, or at least a starting point. Often they are seeing not only points, but also edges and pores that attract their attention. I have spoken with examiners who used level three detail unconsciously before they even knew what it was. Once it was explained to them they realized they had been looking for it all along, they just didn't know what to call it. The three levels of detail use all of the available information contained within a fingerprint to make comparison and identifications. References:

Ashbaugh, D.R. Quantitative-Qualitative Friction Ridge Analysis: An Introduction to Basic and Advance Ridgeology.

Cowger, J. Friction Ridge Skin Comparison and Identification of Fingerprints.

Lee, H. Advances in Fingerprint Technology.

Olsen, R. Scott's Fingerprint Mechanics.

**Elizabeth Oliver is a retired Senior Criminal Identification Specialist from that Charleston, SC Police Department. She is currently serving a UN mission in Kosovo in the field of Forensics.**

**Reprinted from The Prairie Whorlwind, June, 2002-Kansas Division of the IAI**

**THE MEMBERS OF  
THE GEORGIA DIVISION OF THE INTERNATIONAL ASSOCIATION FOR IDENTIFICATION WOULD LIKE TO EXPRESS OUR APPRECIATION TO MAYOR MARY LEE AND HER DEDICATED STAFF OF THE CITY OF RIVERDALE, FOR THEIR HOSPITALITY IN HOSTING OUR SPRING MEETING.**





## Georgia State Division of the International Association for Identification (GAIAI)

The GA IAI would like to offer one of the most sought-after courses in the country right here in our own backyard! **Mr. Kasey Wertheim** will be teaching his **Ridgeology Science Workshop** at the Clayton Regional Law Enforcement Academy from **August 26-30, 2002**. I attended this course last year and highly recommend it to anyone interested in improving their searching speed and profoundly increasing their confidence as a Latent Print Examiner.

### About the Course:

This 40-hour course combines detailed lecture on the scientific bases for friction ridge identification with intense practical exercises emphasizing correct comparison techniques. The lecture segments include the most thorough and up-to-date information on human embryological friction ridge development of any fingerprint course available in the U.S. today. Friction ridge skin structure is also discussed in detail. This is an excellent course to help the student prepare for the IAI certification exam.

### About the Instructor:

Kasey E. Wertheim began studying fingerprint comparison with his father, Pat A. Wertheim, while still in high school. During his chemistry and criminal justice studies at Northern Arizona University, he volunteered at the state crime laboratory in Flagstaff, AZ, and successfully completed two summer internships with the US Secret Service in D.C. After graduation, the Mississippi State Crime Lab hired him where he has also worked for Ron Smith since 1997. Kasey has lectured and published papers internationally. Kasey is a certified instructor and Certified Latent Print Examiner.

### Registration:

I am the contact person for this course. You will find my contact information at the bottom of the page. Please complete the form at the bottom of the page and mail/fax it to me. Go to [www.gaiai.org](http://www.gaiai.org) for more course details!!

### Hotel Arrangements:

We reserved a small block of rooms at the Holiday Inn Express in Fayetteville, Georgia. Transportation will be provided between the hotel and the academy. The hotel phone number is 770-461-5600 and please mention the code **CPD LXCP** to be included in our block of rooms at the special rate.

**Ridgeology Science Workshop Sponsored by the Georgia State Division of the IAI  
August 26-30, 2002 to be held at the Clayton County Police Academy in Jonesboro, Georgia**

Student's Name: \_\_\_\_\_ Social Security #: \_\_\_\_\_

Agency: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: \_\_\_\_\_

\_\_\_\_ Registration Fee enclosed = \$400.00 before August 15, 2002; \$450.00 after August 15, 2002

\_\_\_\_ Please make checks payable to **GA IAI** and send to my address below.

Shannon Hale  
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