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> Law of the Juris-consults was conceived by them as a System which ought traditionally to absorb Civil Laws — Keeping before the Vision a type of Perfect Law. Some writers contend that the Code of Nature exists in the Future and is the Goal toward all Civil Laws are moving — By the Ancients it finds poetical expression in the Fancy of A GOLDEN AGE. (La Farge 1905)

The visual art in the courthouse contains multiple messages about the place of law in the community and the nation and the place of community in the unfolding of our legal history. Historic images are often inaccurate, depicting events in ways that shape a righteous vision of the community and support the nation's myths of creation and destiny. The art is full of signs and symbols, just as the art itself is oftentimes a sign and symbol of our ambiguous attitudes about, and aspirations for the institution of law.

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Part VI
Visual Technologies of Law

Chapter 28
Mediating Disputes with Digital Media

Maurizio Gotti and Larissa D'Angelo

Abstract In the present-day globalisation of trade and commerce, alternative dispute resolution (ADR) – in the forms of arbitration, conciliation and mediation – has been increasingly seen as an efficient, economical and effective alternative to litigation for settling commercial and other disputes. The advent of computer technologies, and of Internet in particular, has promoted procedures to resolve disputes totally, or partly, online. This new phenomenon is known under the acronym of 'ODR' (online dispute resolution). In particular, ODR instruments have proved to respond positively to the needs of medium-small disputes, such as those in B2B (business to business) and B2C (business to consumer) transactions over the Internet. Besides being the easiest and most innovative way of resolving problems deriving from transactions generated on the World Wide Web, ODR is also becoming popular in the resolution of off-line disputes. The reason is that the online dispute resolution service is simple and easy to carry out as it allows users to cancel time and space barriers, offering them the possibility to communicate easily.

In the context of this situation, this chapter analyses two mediation procedures taking place entirely online in order to understand how communication evolves with the aid of digital media and how it differs from the traditional mediating interaction where participants are all physically present in the same place. In particular, the negotiation techniques employed by the mediators are investigated so as to identify any possible influence or conditioning on the part of the new environment and technology made use of. The various phases of a typical procedure are analysed so as to highlight the potentialities of this new tool.

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28.1 Online Dispute Resolution

A recent innovation in the legal field is represented by online dispute resolution (ODR). This procedure has proved to respond positively to the needs of medium-small disputes, such as those in B2B (business to business) and B2C (business to consumer) transactions over the Internet. As e-commerce transactions are spreading quickly, with each of them potentially triggering a dispute (Hart 1999), its growth greatly depends on the possibility to provide consumers with easy access to justice also taking advantage of the opportunities provided by the online environment (Bordone 1998).

In the present-day globalisation of trade and commerce, ODR has been increasingly seen as an efficient, economical and effective alternative to litigation for settling commercial and other disputes (Davis and Benjamin 2006). The complexity of the judicial system is particularly harmful in small-medium patrimonial controversies (Sali 2003), where single consumers are involved; the average time needed for a case to be tried and the costs of a lawyer often do not compensate for the benefits deriving from a favourable verdict. Small/medium firms and single consumers therefore often prefer to renounce their own rights. Negative consequences also derive from litigation between parties belonging to the same partnership or involved in a positive economic relationship; recurring to a judge might lead to a breakdown in the economic relationship, something that is less likely to happen in an extrajudicial resolution of the controversy.

The main functions performed by ODR are the following:

(a) *Assisted negotiation* – Two parties exchange monetary proposals, following an automatic system offered by a provider of ODR services. In this case, no neutral party, meant to help the participants solve the controversy, is present.
(b) *Online conciliation or mediation* – The participants communicate by e-mail or on a chatline, with the presence of a third party, the mediator, who helps them reach an agreement. This model is the one which most faithfully resembles the traditional form of face-to-face mediation.
(c) *Online arbitration* – The participants rely on the decisions of an arbitrator, who not only helps them reach an agreement but also produces an award. This procedure is carried out exchanging all the relative documents over the Internet. In essence, if online mediation is based on the dialogue between the participants, in online arbitration, the parties mainly exchange documents online.

The latest versions of online mediation enable the mediator and all other mediation parties to use a computer, audio and visual communication means and a broadband Internet connection to request and participate seamlessly in live, synchronous audio/visual online mediation proceedings. These proceedings occur before professional mediators who are 'on duty' during normal business hours. Integrated video and audio connections enable all participants to view synchronously any evidentiary materials, documents and audio-video presentations online. The use of several semiotic modes in the mediating event is meant to increase its effectiveness,

thanks to the combination of their multimodal potentialities (Kress and van Leeuwen 2001, 2006).

A person desiring to commence synchronous online mediation must connect his/her computer and monitor equipped with a webcam to the ODR service provider and then access the online mediation request form. After agreeing to terms and conditions of the service, the applicant authorises payment by a major credit card for mediation fees and then inputs detailed information about the mediation requested. Upon approval of the request, the service provider notifies the 'on duty' mediator, who promptly informs the mediation parties of the imminent synchronous audio/visual online session. On the date and time arranged, the parties and the mediator connect themselves to the online mediation provider website and insert the code number of the mediation case, as well as their passwords and usernames. At the start of the session, the mediator introduces himself/herself and asks the parties to do the same; afterwards, each party will be asked to give his/her own version of the facts. The mediator may then ask for further explanations and subsequently will identify the controversial matters and draft a resolution proposal. All participants can see and hear each other synchronously and take part in simultaneous audio communication. This method thus uses a main virtual 'conference room', as well as multiple, additional, separate virtual 'caucus rooms' where the mediator may meet separately with any participant to facilitate negotiations. This shuttling to 'caucus rooms' and rejoining in the 'conference room' can be done as many times as necessary without interrupting the synchronous audio/visual online mediation connection. As happens in traditional mediation, the virtual system guarantees confidentiality in the procedure, assuring privacy in the negotiation and inaccessibility of all communications by third parties.

If an agreement is reached, the mediator sends a draft of the mediation agreement online. This can be examined on the spot by the parties, who can thus edit it live. Thus, a final mediation agreement is stipulated and signed. Thanks to electronic signatures, there is no need to print and exchange documents by fax. This last operation is necessary to make the online agreement binding, thus conferring on it the nature of a real contract enforceable by law.

The ODR system offers several advantages: it allows participants who are not able or do not want to meet in person to communicate rapidly without incurring excessive costs. As lawyers' fees are perhaps the greatest expense in traditional litigation and even sometimes in traditional mediation, in cyber-mediation, parties are instead able to save a large amount of money, as hiring a lawyer is often unnecessary (Lan 2001). Moreover, taking part in cyber-mediation is very convenient, as parties are able to engage in the negotiation when they are available. The mediator can also contact either or both of the parties privately, without affecting the flow of the mediation. The idle time that disputants experience is similarly reduced because, in contrast to traditional mediation, the mediator can devote time to one party without wasting the time of the other party. In addition, many of the cyber-mediation providers have fully automated websites, available all-day long, every day of the year. Parties can therefore proceed to negotiate the settlement of disputes immediately, rather than waiting for a long time to go to trial. The cost of the service is also proportional

to the value of the controversy. Although a payment is necessary to start the mediating process, in case the counterpart refuses to participate, the sum will be refunded entirely.

28.2 Mediation Strategies at Work

The aim of this chapter is to analyse two mediation procedures taking place entirely online in order to understand how communication evolves with the aid of digital media and how it differs from the traditional mediating interaction where participants are all physically present in the same place. In particular, the negotiation techniques employed by the mediators will be investigated so as to identify any possible influence or conditioning on the part of the new environment and technology made use of. The various phases of a typical procedure will be analysed so as to highlight the potentialities of this new tool.

The online mediation sessions analysed here took place during a self-running simulation of the CAN-WINSM conferencing system and are used by Resolution Forum Inc. (http://www.resolutionforum.org/) as part of the training materials employed in the courses required for qualification as an impartial third party in the state of Texas. The mediators involved were Hon. Frank G. Evans (South Texas College of Law) and Janet Rifkin (University of Massachusetts). A synopsis of the two cases is presented in the Appendix.

The events analysed took place in offices or private rooms, a setting completely different from a courtroom trial. This difference has a significant semiotic implication: indeed, in a courtroom, the physical setting conveys an idea of hierarchical power. As Maley rightly asserts:

> Semiotically, the strongest meanings communicated by the physical setting of [a courtroom] and behaviour of those in it are those of hierarchical power. The physical layout of the room expresses, as it is intended to, a 'symbolic representation of the authority of the court' (Goodrich 1988, 143). The judge or magistrate(s) occupies a dominant, focal position, usually (in England or Australia) sitting under an insignia-topped canopy which marks their position as a representative of sovereign justice. The opposing parties, each represented by counsel face the judge or magistrate (the 'bench'), each occupying a delimited area and space of table. Of the chief participants, only the counsel move freely in the inner space […] of the court. (Maley 1994, 32)

An office or private room, instead, conveys an atmosphere of minor formality and greater cooperation. This difference is confirmed by the established convention of standing up and sitting down in a courtroom, while in an online mediation session, participants remain seated. Another difference is seen in certain conversational conventions, such as greetings or inquiries about well-being, which are omitted in court (Jackson 1995, 413), while they are used in a mediation hearing, though they are kept very brief.

Although the setting and atmosphere of the mediation proceedings are more friendly than in court, they however remain formal, as the mediator fears that an informal attitude might reduce the degree of detachment which is required by the situation and thus hinder his/her willingness to show great independence and impartiality.

28.2.1 The Opening Rite

Negotiations with the aid of a mediator are quite different from unassisted one-to-one negotiations, as someone neutral and uninvolved,[1] by whom the parties have agreed to be guided, is appointed to help the parties reach an agreement. However, in order to be successful in his/her task, this person has to gain the parties' respect and trust. The mediator, having the benefit of knowing each party's private and business interests, eventually enjoys a unique position that permits him/her to perceive shared interests, thus resolution options, to which each party is initially blind. Possessed of a uniquely complete understanding of the context of the dispute, the mediator can then, without violating confidence, steer the parties to a resolution that they recognise as addressing their own long-term interests. The use of a trusted neutral person in whom confidence may be shared, and who is looked to in order to add value to the terms of a settlement, is the essence of any mediation procedure. Indeed in this procedure, agreement is reached by the parties through the work of a neutral party, the mediator, who helps them analyse the true interests involved in the dispute. He/she also identifies the differences implied in the parties' respective positions, leading them towards a resolution of the dispute, without imposing any decision (Berger 2006).

This need for trust and confidence explains why the first phase of the mediation session is always devoted to the introduction of the mediator and a clear presentation of the role that he/she is to perform, highlighting in particular his/her neutrality and his/her task as a settlement facilitator, not as a judge/decision-maker. This simple introductory rite achieves a number of goals because in laying out these points, the mediator:

1. Starts building a trusting relationship with each of the parties by being balanced, non-positional, open, honest, competent and positive.
2. Educates by explaining mediation goals and procedures and prepares the parties, who may be unfamiliar with the process, for what will occur in order to avoid surprises.
3. Demonstrates competence by showing command of the process and neutrality regarding its outcome; this helps in developing the parties' trust in the mediator's abilities.

In online mediation, there is a further important aspect to be covered: the mediator is most of all concerned whether all the participants are logged on and ready to start and therefore checks the identity of the participants with a series of questions-answers. Although security codes are given and access is controlled, this identity check represents a crucial issue of online mediation:

(1) M[2]: Welcome everyone. I understand that we have representatives from both sides at the table. Is that correct?

[1] In spite of the fact that neutrality is commonly considered a key component of mediation, the issue of strict neutrality has been called into question by several scholars (e.g. Bernard et al. 1984; Cobb and Rifkin 1991; Rifkin et al. 1991; Kolb and Kressel 1994; Dyck 2000).

[2] M: mediator/T: Texas Department of Transportation/R: Roadbuilder.

T: Good evening. The representatives of the Texas Department of Transportation are here and ready to proceed.
M: Fine, T. Do I understand that your key decision-makers are with you?
T: We who are here have decision-making authority.
R: Hello, we are looking forward to reaching a mutually beneficial agreement at the end of our discussions today.
M: Good, R. Now, do we have key decision-makers from R present with us? (16:30:05-16:36:29)

As in traditional mediation, although participants have previously exchanged working papers and are probably familiar with the mediation process, the mediators make sure that the parties are aware of their role and then ask the participants to confirm their appointment to the case:

(2) M: All right, I believe we now have everyone present. Since you are familiar with our experience and qualifications, I will not go through those items with you again. Also, Janet and I understand you are both satisfied that we have no conflicts of interest that would diminish our neutrality as co-mediators in this matter. Is that correct?
T: Yes, we accept you as mediators.
R: We have present the President from R and Billy Bob Gibbs an expert engineer in land slides. We also have R lead counsel and co-counsel.
M: We assume from your quick responses that you are both agreeable to our serving as your mediators today. We also assume you have both read, agreed to, and signed the mediation agreement and that you have made the commitments of good faith negotiation, confidentiality, and willingness to stay with us that are set forth in that writing. Is that correct?
T: Yes
R: Your assumptions are correct. Signed, sealed and delivered.
M: Thank you. Mediation is a voluntary process through which people can tell their stories and talk about the issues with which they are concerned. We don't take sides or make decisions for you. Our role is to help you tell your story and explore ways to work out this situation. (16:39:42-16:46:02)

As can be seen, besides using a self-labelling move (Heisterkamp 2006) by means of which they define themselves as an unbiased party, the mediators then strengthen this opening move by providing their own description of the mediation process, emphasising the high degree of neutrality required on their part.

28.2.2 Presenting the Case

In the next phase, the traditional mediator usually asks each side (or their lawyers) to briefly present their positions. In online mediation, however, this account is kept very brief as the legal positions of both parties are already summarised and laid out in print so as to avoid any misunderstandings or waste of time:

(3) M: Since we have received your written position papers, we are generally familiar with your respective legal positions in this matter. Therefore, we do not believe it would be productive to ask you to repeat all the facts you have given us in those papers. However, it would probably be helpful if you could summarize the issues as you see them. Because R's expert, Billy Bob Gibbs, is present, perhaps he would be willing to list R's main contentions?

R: We recognize that there have been some oversights made by both parties in this unfortunate situation. We believe that there were many problems some of which were the following:

1. The terms of the contract were construed as being very liberal and lacking in specificity.
2. The condition of the worksite was different from that specified in the contract.
3. The slope and drainage design that R was to follow was defective. We recognized this problem and requested solutions to no avail.
4. Irregular weather conditions.

These are the most pressing issues we feel need to be addressed.

M: Thank you, R. Now, I wonder if T would give us a very brief idea of their main position?

T: Thank you for your comments. Please allow us to respond to them in order. First, we agree the contract was liberally enforced; we do not agree the terms were not specific. Second, the worksite condition was different because of the change in season that occurred while R was delaying the start of the project. Third, the slope and drainage problem was a seasonal problem, not a design defect. Fourth, the irregular weather conditions would not have been a problem if construction had begun in the time specified in the contract. (16:48:27-17:08:07)

By asking the parties to speak first, the mediator accomplishes several objectives at once:

- The parties feel active in handling their own interests.
- The business leader on each side gets to focus on the other side's legal position.
- The legal issues are explained and put on the table early rather than being left unexpressed for possible interference later.

This has the effect of simultaneously forcing everyone to focus not only on their own position but also on the other side's case so that everyone feels that they have been heard and understood. In doing so also, other objectives are accomplished:

- The parties can reflect on the positions of the other side, thereby also instinctively evaluating their own positions from another angle.
- By focusing on the other side's legal position, both parties realise that there is some credible argument on both sides.

In summarising their position, the parties can address their interests and point out their expectations. In this way, the mediator tries to get the case onto the commercial path and away from strict legal rights and interpretations of the dispute. The mediator times this invitation to follow the opening case summaries, while the process is still in the preliminary phase of getting the parties' respective positions into the open. To favour this process of 'clearing the ground', the mediator summarises the legal positions of the parties and asks them to confirm the plain facts as they have been reported. To stress his/her neutral position, the mediator frequently uses tentative verbs and hedging expressions ('*we understand that*,' '*it also appears*,' '*may depend*,' '*it seems*') when reporting the facts. Although his/her report is totally neutral, it does not avoid mentioning the controversial points still open; the fact that

these points are presented in a very objective way, however, represents a useful starting point for the following phase of the mediation process:

(4) M: Summarizing your respective views, we understand that T feels that R's delay in getting started was the primary cause of the many problems experienced, and that R attributes the cause to the design problems and to the different worksite conditions. It also appears from your position papers that clarification of the facts may depend upon the testimony of a person who is not currently available. So, it seems, we have some difference in our recollections and some uncertainty about the facts? (17:08:44)

In this way, the mediator strictly focuses on concrete evidence and prevents any venting up of emotions. He repeatedly and specifically asks for solutions, ideas and suggestions to force the two parties to work together towards a common ground. He underlines any cooperative behaviour of the parties with appreciative expressions such as '*Good for both of you*!' and '*Now we are getting well down the road*':

(5) M: R, do you have any specific suggestions about how the people of Texas could have their new road at no extra cost to the taxpayers?
R: Is T amenable to discussing completion of the contract with R?
T: On behalf of the taxpayers of Texas, we are willing to entertain any consideration of compromise.
M: Good for both of you! Now we are getting well down the road, thanks to your mutual cooperative attitudes. Perhaps we are ready for some specific ideas to resolve the matter. R, do you have any ideas to share?
M: While we await R's reply, let me ask T if it has any ideas how this matter might be resolved?
(17:20:14-17:28:41)

One further strategy employed by the mediator to get the parties to reach an agreement is making them aware of the costs of a possible legal action:

(6) M: Let's discuss for a minute what is likely to happen if you decide that legal action is your best alternative at this point. R, could you give us an estimate of your trial and appellate costs if you proceed with legal action? (17:14:18)

This move is probably made to lead the parties to consider very early in the process whether they intend to collaborate in the mediation or not and how economically favourable a mediated solution is. An online mediator, in fact, does not have as much time as a traditional one to gradually guide the participants towards common grounds: in cyberspace, everything needs to move at a higher speed, and a mediation case cannot be carried on for too long. This also explains why questions and answers are shorter and participants are required to get directly to the point. This economy of language, however, may not favour the typical arts and crafts of a mediator, who instead needs appropriate time to help parties to listen and understand concerns, empathise with each other, vent feelings and confront emotions.

28.2.3 Dealing with Emotional Outbursts

Emotional outbursts can occur for a number of reasons. They are commonly related to the parties' frustration for not being heard or understood and their having a belief

that there is not just a legal but a moral basis for their own convictions. Negotiations are certainly more effective when participants are able to communicate freely, listening to and understanding concerns, empathising with each other, venting feelings and confronting emotions. These emotional moments are considered a fundamental aspect of mediation proceedings:

For many participants, mediation is about the 'venting' of feelings and emotions that they would be unable to express in a more formal setting such as a courtroom. The opportunity to tell one's version of the case directly to the opposing party and to express accompanying emotions can be cathartic for mediation participants (Eisen and Joel 1998, 1323).

In the traditional model of nonvirtual mediation, to overcome the mistrust and the disagreements of the parties, the mediator applies several psychological techniques that allow him to interpret the nonverbal language of the participants as well as their attitudes, their emotions and their immediate reactions. However, the reproduction of this model online may meet some difficulties, owing to the present state of computer techniques. Indeed, the online mediation systems inspired by this open model are strongly limited by the scarce 'communicativeness' of the software now available. One way to improve things might consist in more thoughtful, better-crafted contributions resulting from the ability of the parties to edit messages before sending them. Indeed, '[a]synchronous Internet communication has the advantage of being edited in contrast to impulsive responses that often take place in real time face-to-face mediation discussions' (Melamed 2002). It could be remarked nonetheless that emotions, whenever they appear online, have a stronger impact on the participants and are much more difficult to manage. Indeed, the second online mediation case analysed here shows a few instances of discussions becoming very heated, with the two parties quarrelling bitterly with each other and the arbitrator clearly encountering great difficulties in calming down the participants:

(7) M[3]: Tom, it sounds like you felt that you were clear about what the apartment had to offer. Can you tell us what your concerns are now?
B: Well, she's trying to hold us responsible for other people's actions. No one's happy a bout what happened, but she wants us to pay for a shrink. That's ridiculous. Half this neighborhood needs a shrink. But it's really not possible to discuss this, she just starts screaming at me whenever I try.
M: Tom, can you tell us more about what you mean about Rhonda holding you responsible for others' actions.
B: The guy who jumped her in the garage. This is a high crime area, and those things happen. It's happened to me.
M: Tom, sounds like you had been willing to discuss these matters. Could you talk about what you'd like to communicate about this?
D: First, it is a blatant falsehood that I was NEVER told that there was security in this building. His exact words to me were: 'the apartment management retains a 24-hour security guard and the apartments would soon be fitted with deadbolt locks'. And the issue concerning the psychiatrist was something that was on advice of my private doctor. I don't need a shrink. I need a little more security personally since the apartments have failed to provide it physically.

[3] M: mediator/B: Tom Benson/D: Rhonda McDonald.

B: We're trying to make things safer for all our tenants, but it's really a money issue. The rents here are pretty low, and it's not cheap.
(17:35:38-17:43:07)

The parties' angry feelings often lead them to ignore the rules of regular turn-taking and to respond immediately, instead of waiting for their turn. Moreover, their emotional urge makes them forget about the basic convention of mediation, which requires that each speaker should address the mediator and not the other party directly:

(8) B: Every time I try to talk to her about what happened she gets hysterical and tries to blame me for all her problems.
D: About three months now.
M: Rhonda, sounds like you are mostly concerned with issues of safety and how Tom has communicated with you when your concerns have not been addressed. Is this right?
D: What attempts have you made to talk to me? That's a very sexist statement to claim that I get 'hysterical'!
B: I thought we were supposed to talk to the mediator. (17:20:51-17:23:31)

The mounting feeling of frustration experienced by the parties and the growing dissatisfaction about the outcome of the mediation case are clearly expressed by one of the participants:

(9) B: This keeps getting into an argument which I can do at home so how is this mediation any different? (17:44:06)

To put an end to this highly aggressive situation, the mediator uses two different techniques: he gives one of the parties an 'assignment' (to write a possible solution to the dispute); in the meanwhile, he negotiates with the other party:

(10) M: Rhonda, we are going to hear a little more from Tom and then we want to hear more from you. In the meantime, can you begin to write to us (just don't send it yet) about what it is that you want from Tom at this point. (17:50:22)

This decision of moving on to private sessions proves successful, as the mediator is able on the one hand to talk privately to the first participant about a possible consensual outcome while effectively blocking the possibility of interruption by the other who is kept busy writing her message to be posted later on. This resorting to private sessions is greatly appreciated by the parties themselves:

(11) M: Tom, we think private sessions may help now. We will be back with you in several minutes. This is now a private session with Rhonda.
[…]
B: Private sessions are fine. (18:25:03-18:27:26)

During the private session, the mediator can thus continue his negotiating activity, further uncovering the parties' interests and helping them determine their real priorities. As interests, concerns and priorities are sought, mediators may need to seek clarification or more details of the information offered to assure full understanding. In private sessions, in fact, mediators can question the parties directly to discover further information that may be useful for the achievement of a potential solution designed to satisfy as many interests of both parties as possible. Indeed, through the

use of appropriate questions, the mediator can guide the parties to observe their contradictions and reformulate their views according to those perceptions:

(12) M: Rhonda, it's pretty clear that it doesn't matter to Tom if you leave or not and he is willing to let you out of the lease and give you security and last month's rent back. He has acknowledged that you have legitimate safety concerns. But he has indicated being unwilling to give you other compensation, pay for counseling, or get other security measures in place before three months from now. What options do you realistically have? Would you prefer to move out? If you stay, do you have any creative ideas to help Tom change his mind?

D: I need my expenses paid! I've sacrificed so much! My school work, my job, I have no alternatives. I am lucky to be alive, and people want to quibble over money. If I stay, I will pay for my own security and not pay two months' rent. Or if I move, I want all my money back. He lied, he put me at risk, and I have to suffer the consequences forever! If I don't get this help, I'll never get on with my life! His attempts are not clear enough, and not good enough essentially. (18:29:02-18:32:52)

These inquiries go well beyond legal positions, such as liability, damage and remedies, and extend to personal or emotional interests, such as face saving:

(13) M: Rhonda, you clearly want more compensation for your experiences which he contributed to and you want more understanding from him. We are happy to talk with him about these things and see what is possible. While we speak with him, can you think a little bit about what your choices are IF he doesn't end up agreeing to more. (18:36:53)

As can be seen in this quotation, when one of the participants brings forward her demands in an angry and emotional way, the mediator decides to report the request focusing on matters instead of emotions. In this way, he is able to reframe disputant face-threats by restating disputant criticisms of another into expression of possible solution. As has been shown, this technique of restating and summarising what a disputant advocates is an important strategy used by mediators, which turns out to be not at all neutral as in this way 'they can manipulate the substantive character of a discussion and push disputants towards settlements they might not ordinarily accept' (Jacobs 2002, 1414).

28.2.4 Working Towards a Solution

In private sessions, the mediator takes pains, through questioning and through demonstrations of empathy, to ensure that all participants feel that they have been heard and understood. This technique helps develop the crucial sense of trust that participants must place in the mediator if mediation is to be successful. This is the reason why the mediator often punctuates his remarks with sympathetic phrases such as '*Yes… I understand… I know… I see…'* Since parties may be reluctant to disclose information that weakens their own insistence on positions, the mediator often must dig for such information and will typically start such inquiry with open-ended questions. These questions elicit maximum response from the speaker without any

narrowing of the topic by the questioner. Open-ended questions typically used by mediators include the following: '*What do I need to know to understand this matter?'* and '*What do you hope to get out of this course of action?'* and '*What is your goal in this mediation?'*

During the discussion, mediators and participants are seen proposing possible solutions for consideration. These proposals generally aim to satisfy both sides to some degree. They are an amalgam of creative solutions, information and party interests. Mediators may convey proposals, whether party-generated or mediator-generated, as hypothetical suggestions (phrased by the mediator as '*What if*…?' or '*Suppose*…?'). For example, in the first online mediation analysed here as well as formulating many proposals and hypothetical suggestions, the mediator constantly asks for suggestions and ideas from the parties to solve the conflict:

(14) M: T, would you consider splitting the cost of the consultant if you were able to otherwise resolve this without litigation and possible insolvency? (17:50:08)

(15) M: I wonder if might be helpful to have the consultant concentrate on the extra cost R would incur by reason of the site conditions. As you may recall, that was to be the focal point of the mini-trial we were to consider if an agreement could not be negotiated. Perhaps, if you both had faith in the neutral consultant, that would give you a common point for deciding how much is due R at this point. T, would that be an appropriate function for the consultant? (17:59:12)

The various proposals formulated in private sessions are then reported to the other party to see if they meet with his/her approval. For example, in the second online mediations analysed here, when the plaintiff expresses her final requests, the mediator acknowledges them and offers to deliver the message to the counterpart during a private session with him. Only when the mediator feels that an agreement is close at hand does he decide to bring the participants back to a joint session:

(16) M: Tom, thanks for waiting. We asked you a while ago about how you would like to be approached in the future by Rhonda. A second question for you then is given both of your concerns about how the safety issue is resolved, what is your response to the following suggestion from Rhonda. She offers to put in her own security system in lieu of paying two months' rent.

B: A little while ago she said that she wants a $9.95 lock from Walmart, so two months seems too much. We'll agree to one month's rent plus $20. And if she wants to use it for a lock, that's fine. She can consider the month's rent as us saying we're sorry about what happened to you, even though it wasn't our fault.

M: Tom, sounds like we are getting close to building an agreement and have some offers on the table to work with. Why don't we bring you both together. (18:39:29-18:45:58)

When common consent had been reached, the mediator ensures that the parties are well aware of the agreement terms before the participants are asked to sign the final form. Rather than listing all commitments by one party and then those of the other, the mediator prefers to phrase the components of the agreement in a balanced fashion with one concession offset by the other side's concession. This balancing

helps underscore the mutual advantages in the agreement and allows mutual face saving by showing concessions on both sides:

(17) M: Good. Thanks, once again, for your cooperative attitudes in this matter. It appears to me that you should be able to get this resolved this evening. As I understand your respective wishes, you would like the consultant to make an inspection of the jobsite and give you his estimates regarding R's additional costs for completing the work within the time specifications of T, and once that cost has been determined, R will receive periodic payments during the work, which will prevent its pending bankruptcy. This way, Texas gets its highway at less cost than it would take for a new contractor to come in and complete the work. Is this about what you have so far agreed? (18:06:44)

28.3 Technical Problems and Constraints

When analysing the two online mediation cases, a number of snags have been noted, mainly deriving from technical problems. For example, messages are often sent twice by mistake or are not well synchronised, causing one person's answer to overlap with someone else's thus making the flow of the interaction very difficult. Here are a couple of examples:

(18) R: Mediator, sorry we are losing sinch with your messages. We will respond in a minute with suggestions for resolution. (17:19:56)
(19) R: Sorry, again, we seem to be staying one message behind you again. (17:22:59)

Also recurrent are problems due to sudden loss of communication or difficulties in establishing contact:

(20) M: R, are you reading us? (17:27:11)
(21) M: We are not reading a response. Is anyone there? (16:32:10)

All these snags make the progress of the mediation difficult and, at times, puzzling. Moreover, apart from these technical problems, the virtual environment at times seems to constrain the natural flow of negotiations. Indeed, communication online does not always express the variable tone, pitch and volume of the participants and does not seem to convey personality traits or physical cues as well as the traditional way. Indeed, mediators have sometimes found it more difficult to evaluate the flexibility of a particular party or the strength of a party's feelings or confidence on a particular issue. Consequently, some authors have argued that the lack of personal presence in cyber-mediation can make it more difficult for the mediator to maintain effective control over the negotiating parties:

The online medium, at least the e-mail environment, makes it difficult for the mediator to manage or temper the tone of the interactions without sounding controlling and judgmental. The mediator, at least in the beginning, is a disembodied voice and cannot use her own physical 'personhood' to set the parties at ease and create an environment for sustained problem-solving. Similarly, absent the physical presence of the disputants, the mediator has difficulty using the intuitive cues of

body language, facial expression, and verbal tonality that are part of face-to-face mediation processes (Katsh et al. 2000, 714).

Unlike in traditional mediation, where participants are physically present and the mediator coordinates turn-taking, in the transcripts analysed here, turn-taking is not always respected faithfully because of technical delays and the parties' emotional urge to respond immediately, instead of waiting for their turn. In order to communicate effectively in a chat room, it is in fact essential for participants to wait politely and patiently for their turn, following the mediator's guidance – something extremely hard to achieve when strong emotions are involved. Also the absence of physical contact may penalise the outcome of the mediation process. As Katsh et al. aptly remark:

When the parties, shake hands, sign an agreement, and get congratulated personally by the mediator, there is both symbolic as well as substantive closure to a mediation. E-mail does not lend itself to these ceremonial moments. As a consequence, it may be harder for the mediator to facilitate a sense of satisfaction among the participants (Katsh et al. 2000, 716).

On the other hand, mediating in cyberspace also has advantages: it is faster and immediate and can take place anywhere at any time of the day. The scheduling difficulties that can arise in traditional mediation do not appear in ODR; parties are able to engage in the negotiation when they are ready and at convenient times. The mediator can contact either or both of the parties privately, without affecting the flow of the mediation. The idle time that disputants experience is similarly reduced because, in contrast to traditional mediation, the mediator can devote time to one party without wasting the time of the other party. As Melamed (2002) explains:

Experienced mediators are well aware of the benefits of asynchrony. This is a big part of the reason that many mediators 'caucus' (meet separately) with participants. Mediators want to slow the process down and assist participants to craft more capable contributions. This concept of slowing the process down and allowing participants to safely craft their contributions is at the heart of caucusing. Surely, the Internet works capably as an extension of individual party caucus and is remarkably convenient and affordable. Internet communications take less time to read and clients do not hear a professional fee metre clicking. When the Internet is utilised for caucus, the 'non-caucusing participant' does not need to sit in the waiting room or library reading *Time* magazine or growing resentful at being ignored.

28.4 Conclusion

The analysis carried in out in this chapter has shown that the ODR system offers several advantages: it allows participants who are not able or do not want to meet in person to communicate rapidly without incurring excessive costs. The system also allows the supplier of the service to name experienced and prepared mediators

without worrying about travel distances and expenses and without having to rent a facility to conduct the mediation proceedings. International commercial relations are favoured since the solution of a controversy between international parties is not slowed down or impeded by long distances. The advantages of this instrument are clear both in terms of relationships between firms, as well as those between consumers and businesses. ODR does not merely translate traditional alternative dispute resolution (ADR) instruments to be used on the web; rather, if ADR responds to the need to facilitate access to the instruments of justice, especially from an economic point of view, ODR responds to the ever-increasing need of businesses and consumers to solve economic disputes taking advantage of the rapidity and convenience of the online instrument.

The system nevertheless has some drawbacks when compared to traditional mediation. Virtual communication – at least as it is now – is not very 'communicative' from an emotional and nonverbal point of view. Negotiations are certainly more effective when parties are able to communicate freely facing one another. For example, helping parties to listen and understand concerns, empathise with each other, vent feelings and confront emotions is considered an important art in mediation. In a virtual environment, it is therefore more difficult to evaluate the flexibility of a particular party or the strength of a party's feelings or confidence on a particular issue. Consequently, the lack of personal presence in cyber-mediation can make it more difficult for the mediator to maintain effective control over the negotiating parties. Another important issue is the concern over the protection of confidential material in ODR (Katsh 1996): while traditional mediation does not necessarily create a physical record, online mediation creates an electronic record. This could potentially enable a party to easily print out and distribute e-mail communications with their attached documentation without the knowledge of the other party. This sort of behaviour might hinder the development of open and honest exchanges in cyber-mediation. Finally, the familiarity of users with IT technologies becomes fundamental when the Internet becomes the main vehicle through which mediation takes place. To take advantage of ODR, a user must be able to manage the software and hardware necessary to chat online and use a webcam (Conley Tyler and Raines 2006; Hattotuwa 2006).

Experts in this sector therefore agree in considering the present model still inadequate and believe that new efforts to improve the level of virtual communication are necessary. Some improvement can certainly derive from a greater diffusion of video and audio communication systems (webcams) that make long-distance visual communication possible between the participants and the mediator. In this way, synchronous communication and chat room conferences would allow all mediation participants to hear and see each other live, as in a face-to-face meeting, and could thus be used to recreate, as far as possible, the typical situation of a hearing of mediation in a virtual environment. This advantage would greatly improve communication and interaction, including access to important verbal, 'body language' and emotion-related cues or observations lacking in the early forms of ODR methods.

Although cyber-mediation has been criticised because of its impersonal nature, it is likely to become more popular and better suited to resolving disputes as technology

advances. Online mediation will probably not manifest fully until videoconferencing becomes commonplace, video cameras and microphones are built into every computer, videoconferencing software is easily accessible and modems are fast enough.[4] When this becomes a common reality, ODR will reach consumers on a wider scale, and users will familiarise more with the many advantages offered by this virtual procedure.

28.5 Appendix

28.5.1 Roadbuilder vs. Transportation Department (Online Mediation 1)

The Texas Department of Transportation decided to construct a new road over a rough, mountainous area in West Texas. The work was to cover two separate stretches of roadway, the North Slope and the South Slope, located some 150 miles apart, and was to be performed under two separate $25 million fixed-price contracts. A number of highway construction firms participated in the bidding process, among them Roadbuilder, Inc. of Newark, New Jersey, which was awarded both contracts because of its lowest combined bid.

Under each of the two contracts, Roadbuilder was required to perform all excavation and grading work, which included retaining structures and reinforced concrete walls to stabilise the ground above and below the roadway. Roadbuilder also was required to instal the necessary pipes and drainways to assure adequate rainfall drainage.

Roadbuilder was delayed in commencing the work and ran into delays and additional expenses due to encountering unexpected rock outcrops and inclement weather. In February 1997, Roadbuilder notified the department of its additional expenses incurred in the work and refused to proceed further until these expenses were reimbursed. In early March 1997, the state notified Roadbuilder that it was terminating the contract because of Roadbuilder's failure to perform.

28.5.2 Rhonda McDonald vs. Easy Living Apartments (Online Mediation 2)

Rhonda McDonald is a third year law student. She works all day and takes night classes. She was looking for a place to live and looked at Easy Living Apartments

[4] The important role played by technology is strongly emphasised by Katsh and Wing, who consider it a 'fourth party' in ODR able to serve as 'a tool for the third party by aiding, assisting, and enhancing the third party's information management activities' (Katsh and Wing 2006, 113).

as a possible solution. She spoke with Mr. Benson, the unit manager, because safety was her main concern since this building is located in a high-crime and high-risk area. She was assured that the building had 24-h security guards and deadbolt locks on all the doors and only after that assurance did she move in. She had made repeated attempts to follow up on the locks and security guards, but at all times, her inquiries were dismissed.

A few weeks ago, on her way from her car to the apartment, she was grabbed by a man and threatened to keep quiet. She was barely able to escape and make it into her apartment and the neighbours called the police. Easy Living Apartments refuse to be held responsible for what happened and believe nothing was said concerning security, when Rhonda McDonald first visited the building.

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Chapter 29
The Alleged Liveness of "Live": Legal Visuality, Biometric Liveness Testing and the Metaphysics of Presence

Joseph Pugliese

Abstract In the context of contemporary societies preoccupied with questions of surveillance and identity verification, biometric systems are being increasingly deployed across a wide range of institutions and organisations in order to provide security of access. In this chapter, I examine the techniques that might be deployed by fraudsters in order to trick biometric systems into giving them illegitimate access to data and/or controlled areas. In order to counter the tactics used by fraudsters to "fool" biometric systems, biometric scientists and technologists are in-building within the technologies a number of tests designed to detect fraudsters. One of the key fraud detection methods being deployed by biometric systems is so-called liveness testing; liveness testing is being used to determine whether the person being screened by the system is actually present (and "alive") rather than a simulacrum reproducing a stolen identity. In the course of this chapter, I proceed to situate the procedures of "liveness testing" within a Derridean critique of the metaphysics of presence in order to disclose the unacknowledged philosophemes that inform legal, scientific and technological understandings of the body, the legal subject and identity. I conclude this essay by focusing on the development of a new range of biometric technologies that are attempting to preclude digital spoofing by focusing on the seemingly non-replicable depths of the inside of the body. Regardless of this descent into the depths of the body, I argue that, once again, these transductions of the "raw" organic material of the soma cannot escape either the logic of iterability or its consequent spoofable effects.

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29.1 Introduction

In the context of contemporary societies preoccupied with questions of surveillance and identity verification, biometric systems are being increasingly deployed across a wide range of institutions and organisations in order to provide security of access. Across much of the relevant literature, biometric technologies are presented as providing virtually foolproof systems of identification and/or verification of the subjects the biometric systems screen. Yet, despite these claims, the literature also acknowledges that biometric systems are open to being tricked by fraudsters. Biometric technologies, as technologies dependent on identity authentication and attendant economies of legal subjects and verifiable signatories, are haunted by the spectres of digital frauds and identity spoofs.

I situate these spectres of digital frauds and identity spoofs within Foucault's (1980, 142) theorisation of power as at once subjugating and productive of in-built resistances: "hence one should not assume a massive and primal condition of domination, a binary structure with its 'dominators' on one side and 'dominated' on the other …. [T]here are no relations of power without resistances; the latter are all the more real and effective because they are formed right at the point where relations of power are exercised". Taking this theorisation of power as my point of departure, I proceed to examine a series of techniques that might be deployed by fraudsters in order to trick biometric systems into giving them illegitimate physical and/or symbolic access to data and/or controlled areas. My aim is not to endorse the exercise of biometric fraud through techniques of spoofing; rather, it is to evidence the Foucauldian thesis of power as marked by in-built resistances and productive of unintended effects.

In order to counter the tactics used by fraudsters to "fool" biometric systems, biometric scientists and technologists are in-building within the technologies a number of tests designed to detect fraudsters. One of the key fraud detection methods being deployed by biometric systems is so-called liveness testing; liveness testing is being used to determine whether the person being screened by the system is actually present (and "alive") rather than a simulacrum reproducing a stolen identity. In the course of this chapter, I proceed to situate the procedures of "liveness testing" within a Derridean critique of the metaphysics of presence in order to disclose the unacknowledged philosophemes that inform legal, scientific and technological understandings of the body, the subject and identity.

The western legal category of the subject is founded on the Enlightenment conceptualisation of identity as univocally self-same. Biometric systems of identification and verification are predicated on this Enlightenment understanding of the subject. The authorising logic of these systems is driven by the notion that, despite micro permutations, the empiricity of flesh (the iris, the face or the finger print) encodes an identity, in the form of a visual template, that is, continuous or "identical" with itself throughout the subject's existence. Yet, within biometric systems, this logic must be underpinned, simultaneously, by a dissemination and decentring of self-same identity. This other, heteronomous logic is perfectly encapsulated in the following

biometric formula: "Identification is often referred to as *1*: *N* (*one-to-N* or *one-to-many*), because a person's biometric information is compared against multiple (*N*) records" (Nanavati et al. 2002, 12). One-to-*N* or one-to-many names the manner in which the unicity of identity is invested with the law of the other (signatory citation as different in every instance), of the other that guarantees the conditions of possibility for the self-same to be constituted as an identifiably unique identity, even as it opens up the same to a movement of discontinuity and dissemination (across various institutional sites and biometric systems with every instance of re-enrolment).

"Biometric authentication", explain Woodward et al., "refers to *automated methods of identifying or verifying* the identity of a *living person in real time* based on a *physical characteristic* or *personal trait*" (2001, 11). The identificatory machining or automation of the living person in real time encapsulates the non-negotiable aporias that inscribe biometrics, in which a subject's biometric *image file* is termed the *corpus* – that is, in which the image of a subject's bio-identificatory feature becomes, indissociably, her machined/automated corpus. In other words, the very act of "live" authentication before a biometric system can only ever remain an assertion without absolute proof as it can only be performed through the process of template citation and signatory quotation, a process that irreducibly dissimulates both "life" and "authentic" identity and that structurally ensures that the category of the "live" biometric template image is always already a *visual artefact* premised on multiple mediations.

I conclude this chapter by focusing on the development of a new range of biometric technologies, such as biometric vascular pattern recognition, that are attempting to preclude digital spoofing by focusing on the seemingly non-replicable depths of the inside of the body. Regardless of this descent into the depths of the body, I argue that, once again, these transductions of the "raw" organic material of the *soma* cannot escape either the logic of iterability or its consequent spoofable effects.

29.2 Deconstructing the Metaphysics of Presence

Once a biometric technology, such as facial scan, has been set up in a particular context, the subject whose identity will be verified by this biometric system is required initially to enrol by supplying the requisite biometric data, such as a digital scan of their face, which is subsequently converted into a visual template. The template, that is, generated by the algorithmic encoding of a subject's distinctive biometric features, is stored in the system's server and is used to verify a user's identity every time they present themselves for biometric screening – in other words, the initial enrolment template is matched against the user's verification template.

When theorised in terms of their constitutive rhetoric, biometric templates reproduce the figural logic of synecdoches: that is, every biometric template functions synecdochically in terms of a part signifying the larger whole of the enrolled subject. I want to elaborate on the juridico-political dimensions of theorising biometric templates in terms of synecdoches by arguing that biometric templates must be viewed

as also synecdoches of the legal category of the subject. In particular, the biometric template must be conceptualised as juridico-political entity as it synecdochically functions to constitute and reproduce the legal category of the person-as-subject. In other words, when confronted by a biometric system, unless one is enabled to produce a template, one is directly denied the subject status of legal personhood; whether or not a subject is enabled to take up this position directly determines whether or not they may be given legal or authorised access to restricted space and/or information. In this biometric schema, not to produce a template is equivalent to having no legal ontology.

The indissociable relation between the question of visual representation and the very possibility of political agency in and through law is brought into sharp focus in Peter Goodrich's (1990, 263) naming of this relation as one that is played out in "the theatre of attachment". Through his invocation of this reflexively representational metaphor, Goodrich (1990, 263), drawing on the work of Pierre Legendre, delineates the manner in which the legal subject is predicated on the "forms of attachment to law": "The question is initially that of the theatre of attachment, an issue of the mask or role or identity that will bind the individual to law, that will tie together in legal form the unity of a lived existence and so secure the political agency of the human subject through representation". My reading of the biometric template in terms of the figure of synecdoche (as instrumental in constructing the legal category of the biometric subject) must be seen as a contemporary, *in silico* version of what Goodrich (1990, 263–4) terms an "actor's mask":

Note that one of the central constructions of civil law, that which, following Justinian's terminology, we call the *law of persons*, literally derives from *persona* – referring initially to an actor's mask – and authorises me to translate the formula *de iure personarum* by "of the law of masks". In all institutional systems the political subject is reproduced through masks. This translation contributes to the rehabilitation of the problematic of the image at the heart of the legal order.

What Legendre and Goodrich underscore, in their critical genealogies of law, is the systemic erasure of the image at the very heart of law even as it establishes the (disavowed) conditions of possibility of the legal subject as representational being, as actor and agent in the sociolegal theatre. In articulating the importance of zero in Legendre's genealogies of law, Goodrich (1990, 281) underscores its value, in law, as "a lack, an absence that is filled by entry into the symbolic": "The entry of the individual into the symbolic, the transition from zero to one, from lack to identity, is the condition of institutional existence, the capture of the subject by law. What is at stake in the order of reference and in the 'name of the law' is precisely the possibility of social speech – and there is no other speech – and so the possibility of being human, or in scholastic terms of becoming 'a speaking being'" (Goodrich 1990, 281, 282).

The capture of the subject by law, through the production of biometric templates, enables, simultaneously, the possibility for the subversion of law. In what would seem, in the first instance, to be a counter-intuitive logic, biometric "enrolment and verification templates should never be identical": "Because different templates are generated each time a user interacts with a biometric system, there is no 100 per cent

correlation between enrolment and verification templates" (Nanavati et al. 2002, 19, 21). Indeed, an exact one-to-one identical match is seen as the sign of fraud, as it signals the possibility that an impostor has stolen the initial enrolment template of someone else and is presenting it in order illegitimately to gain access to the system. This seeming counter-intuitive logic, that demands iteration of identity with difference, graphically exemplifies the deconstructive movement of iteration, as a movement always already inscribed with alterity in every new instance of repetition. Jacques Derrida discusses this paradox precisely in the context of that exemplar of unique identity: the *signature* – a term that is now a fundamental signifier in the discourse of biometrics, where it is used to name the unique identity of enrolled subjects across diverse biometric systems, including gait-signature, keystroke-signature and so on.

Derrida (1990, 20) unpacks the paradox of the signature in the context of deconstructing its representation as a privileged signifier that marks an indissociable tie to an originary figure, what he terms the "tethering to the source":

In order for the tethering to the source to occur, what must be retained is the absolute singularity of a signature-event and a signature form: the pure reproducibility of a pure event…But the conditions of possibility of those effects is simultaneously, once again, the condition of their impossibility, of the impossibility of their rigorous purity. In order to function, that is, to be readable, a signature must have a repeatable, iterable, imitable form.

The constitutively repeatable status of identity is, in fact, inscribed in the very etymological emergence of the term "identity". In his detailed tracking of the history of identity papers and passports in early modern Europe, Valentin Groebner (2007, 26) writes: "'Identity' is a medieval coinage. It was in common use in its Latin form *idemptitas* or *identitas* in medieval logic. Derived from *idem*, 'the same,' or *identidem*, 'time and again,' it denoted not uniqueness, but the features that the various elements of a group had in common". This embedded etymological meaning, Groebner (2007, 219) demonstrates, "[f]rom the mid-fifteenth century onwards", becomes the animating logic of technologies of identity verification and authentication: "It was reproduction that literally created the proofs of a person's individuality: an individual had to be doubled by an identity document plus an official internal record on the document issued".

In biometrics, this iterable and repeatable identity form can never be identical across each instance of its repetition: "As opposed to an identical string of data", Nanavati et al. (2002, 262) explain, "biometric templates vary with each finger placement, iris acquisition, and voice recording: the same finger, placed over and over again, generates a different template with each placement. This is attributable to minute variations in presentation – pressure, distance … which lead to the extraction of slightly different features for each template". In other words, the unique identity biometric of a subject is indissociably tied to iterability, as "the logic that ties repetition to alterity" (Derrida 1990, 7). It is the logic of iterability that problematises biometrics' reliance on the foundational concept of the "root identity", as "The authoritative identity [of a subject] established and maintained with high integrity by the system" (Office of the Under Secretary of Defense for Acquisition, Technology,

and Logistics 2007, 163). In the biometric literature, a subject's "root identity" is described as being predicated on the "ground truth" (Parziale and Chen 2009, 107) of their biometric attributes. A subject's biometric "root identity" is, however, in keeping with the rhetorical effects of this rhizomatic trope, always caught within a transversal movement of iterability that precludes the possibility of an authoritative self-identity not always already marked by difference.

Conceptualised in Derridean terms, then, the biometric signature of a subject can only function as the instantiation of a unique signature event that signals the "presence" of a non-fraudulent subject through an iterable movement that must be differentially marked at every "presentation" – as the "process by which a user provides biometric data to an acquisition device" (Nanavati et al. 2002, 17). I place "presence" in scare marks as there is inscribed in this aporetic movement – in which the identity of the self-same must be at once different – not only a deconstruction of the concept of a unique identity inextricably tethered to a root source but there is also inscribed a deconstruction of the metaphysics of presence that fundamentally informs the discourse of biometrics and its constitutive lexemes.

Before I proceed further in my discussion of the constitutive role of the metaphysics of presence in biometric technologies, I want to spend some time unpacking Derrida's deconstruction of the metaphysics of presence. The identity of a subject or sign is constituted, in Derridean terms, through the operations of *différance*, that is, the identity of the sign "cat", for instance, only achieves its signifying value through a system of differential relations where the letters "c", "a" and "t" differ from all the other letters of the alphabet: "every concept is inscribed in a chain or in a system within which it refers to the other, to other concepts, by means of the systematic play of difference" (Derrida 1986, 11). This differential relation, Derrida argues, is also constituted by a complex system of deferrals, in that all the other signs of the alphabet that differ from the letters "c", "a" and "t" are at once deferred in their "appearance" even as they are constitutive, through their difference, of the signifying value of "c", "a" and "t":

It is because of *différance* that the movement of signification is possible only if each so-called "present" element, each element appearing on the scene of presence, is related to something other than itself, thereby keeping within itself the mark of the past element, and already letting itself be vitiated by the mark of its relation to the future element, this trace being related no less to what is called the future than to what is called the past, and constituting what is called the present by means of this very relation to what it is not …. An interval must separate the present from what it is not in order for the present to be itself, but this interval that constitutes it as present must, by the same token, divide the present in and of itself, thereby also dividing, along with the present, everything that is thought on the basis of the present, that is, in our metaphysical language, every being, and singularly substance or the subject (Derrida 1986, 13).

Derrida (1986, 11) here draws attention to the manner in which the present can never be fully present unto itself as it is always already divided by this play of difference and deferral: "The first consequence to be drawn from this is that the signified concept is never present in and of itself, in a sufficient presence that would

refer only to itself". Such foundational categories of western metaphysics as "being" or "the subject", then, can no longer be thought as constituted by a self-identical presence; rather, these foundational categories, premised on a metaphysics of pure and undivided presence, must be seen as the effects of this play of *différance*. This detour into Derridean deconstruction has been essential in order to begin to disclose the manner in which biometric systems are underpinned precisely by this unacknowledged metaphysics of presence; and, furthermore, the ever-present danger of spoofs and frauds is actually, I argue, a system-effect of biometrics' reliance on a metaphysics of presence. The one (a metaphysics of presence) produces the other (frauds, impostors).

29.3 Biometric Latency and Bogus Authentication

In Woodward et al.'s *Biometrics*: *Identity Assurance in the Information Age* (2003, 8), a fictional character named "Cathy" is constructed by the authors in order to illustrate how bogus identification and identity spoofing can occur within biometric systems:

The biometric authentication process begins with a biometric sensor of some kind. When Cathy tries to log in, the sensor collects a biometric reading from her and generates a biometric template from the reading, which becomes the authenticator. The verifier is based on one or more biometric readings previously collected from Cathy. The verification procedure essentially measures how closely the authenticator matches the verifier. If the system decides that the match is "close enough", the system authenticates Cathy; otherwise authentication is denied.

Woodward et al. (2003, 8) call the measured properties of Cathy's biometric trait "the base secret in a biometric system". This "base secret", however, turns out to be, through another aporetic turn, publicly available as a type of "latency":

It's important to recognize that her [Cathy's] biometric traits aren't really secrets. Cathy often leaves measurable traces of these "secrets" wherever she goes, such as fingerprints on surfaces, the recorded sound of her voice, or even video records of her face and body. This "latency" provides a way for attackers to generate a bogus authenticator and use it to trick the system into thinking that Cathy is actually present. Moreover, it may be possible to intercept a genuine authenticator collected from Cathy and replay it later. Thus, accurate authentication depends in part on whether the system can ensure that biometric authenticators are actually presented by live people (Woodward et al. 2003, 8).

The public latency of the base secret encapsulates the aporetic logic of biometrics as a *somatechnology*. Somatechnics refers to the indissociable relation between bodies (*soma*) and technologies (*technè*): bodies can only achieve their cultural intelligibility, precisely as "bodies", through their inscription by various technologies, including language (see Somatechnics Research Centre; Pugliese and Stryker 2009). The animating principle of all biometric systems is the technologisation of the body's key identifiers: the body's identificatory features must be extracted and

technologised into digital templates. Somatic features, within biometric systems, are only intelligible once they have been visually scanned, algorithmically processed and "fixed" into templates. This process enables the serialisation of biometric features as the logic of the system is predicated, as I argued above, on the iterability of unique identificatory features or, couched in Derridean terms, on the possibility of "originary reproduction" (Derrida 1976, 209), in which the unique becomes culturally intelligible as "unique" through the effaced process of its very iterability. And this dependency on the iterable logic of originary reproduction is not something exclusive to biometric technologies of identity. Rather, it is constitutive of all identification-based systems. As Groebner (2007, 252) concludes in his survey of the history of identity documents in early modern Europe, "the history of identification is at once the history of the technologies of reproduction". Although he does not draw on Derridean theory to explicate his argument, Groebner effectively articulates a deconstructive understanding of the philosophical presuppositions that underpin identity and reproduction. Remarking critically on what he terms "the fiction of authenticity", Groebner (2007, 219) underscores how the earliest identity-based documents were, unsurprisingly, already haunted by the spectres of impostors, fraud and proxies:

The history of identification I have traced from the mid-fifteenth to the end of the seventeenth century leads to an unequivocal conclusion. After two centuries of regulation, laws, and ever newer forms of official documents declared compulsory, after two centuries of bureaucratic orders – "Register everyone and everything!" – and of repeated admonitions that stricter attention be paid to recording and checking individuals, what was the outcome of all these endeavours? The rise of the con man and the impostor …. Their careers in dissimulation took place not in spite of, but through the expanding systems of bureaucratic control.

It is, then, the structural demand that unique identificatory features be reproducible/iterable, in order to be biometrically intelligible and legible, that generates the very possibility for fraud. The measurable traces of the biometric "secrets" that a subject leaves behind function to construct a public "theatre" of latent spoofs, spectres and feints. In the course of the practices of her or his everyday life, a subject leaves a trail of biometric traces (fingerprints, DNA, CCTV images) across diverse spaces and contexts. These traces are at one and the same time secrets that are publicly available to be put to use in a repertoire of feints and impostures. The aporia that I am marking here of a secret that is simultaneously public is in fact constitutive of the logic of the secret as such. This is the "enigma" of the secret that Derrida (1992, 95) draws attention to:

The enigma of which I am speaking here … is the *sharing of the secret*. Not only the sharing of the secret with the other, my partner in a sect or in a secret society, my accomplice, my witness, my ally. I refer first of all to the secret shared *within itself*, its partition "proper", which divides the essence of a secret that cannot even appear to one alone except in starting to be lost, to divulge itself, hence to dissimulate itself, as secret, in showing itself: dissimulating its dissimulation.

In order for a secret to be a secret as such, it must institute a "negation that denies itself" (Derrida 1992, 95): dividing itself ("its partition 'proper'"), the secret must

"lose" itself, and divulge itself as already other, as "dissimulating its dissimulation" in order to maintain its status as secret. The secret's status as secret is predicated on its denegated disclosure and dissimulation of itself. Graphically inscribed here is the aporetic logic that animates the possibility for all the biometric secret traces that a subject leaves behind to be dissimulated by another. One's "proper" somatic traces are – as latently legible biometric traits that are, in Woodward et al.'s (2003) words, "read" by biometric systems – only legible because they are simultaneously iterable and inscribed by alterity, that is, by the mark of the other.

I draw on the metaphor of a public "theatre" of biometric spoofs and mimics as the techniques available to subvert biometric systems are all couched in a performative lexicon of masquerade and mimicry. Woodward et al. (2003) list the following techniques of biometric fraud:

> *Masquerade*: This is the classic risk to an authentication system. If Henry's [another fictional character] goal is masquerade, he's simply trying to convince the system that he is in fact someone else, perhaps Cathy, since the system already knows how to recognize her. Henry proceeds by trying to trick the system into accepting him as being the other person. (2003, 9)
> *Replication*: In this attack, Henry produces a copy of whatever Cathy is using to authenticate herself. (2003, 13)
> *Mimics*: Mimics are when a user is able to impersonate another identity. (2003, 14)
> *Artifacts*: Artifacts are when an attacker is able to present a manufactured biometric (such as a fake finger) to the system. (2003, 14)
> *Digital Spoofing*: Also known as a *playback attack*, this attack takes advantage of the fact that all authentication data is ultimately reduced to bits on a wire. If the system expects a particular value for the authenticator, the attacker intercepts this value and replays it to masquerade as someone else. (2003, 14)

Operative in this theatre of biometric mimics and impostors is what Derrida (2002b, 57) terms, in another context, a "mediatic-techno-performativity and a logic of the phantasmata". The "authentic" and "unique" biometric signature of a subject can only be rendered legible biometrically by being mediated by the operations of digital technology. The process of biometric authentication can only be staged through a performative of mediated iterability that is at all times open to the haunting spectres of latent phantasmata: unique "bits" of the subject as so much discarded but latent traces waiting to be capitalised, "re-animated", by the fraudster-in-waiting. The logic of iterability that underpins all biometric systems establishes the conditions of possibility for both the technological encoding of the unique features of a subject's *soma* and the reproducibility of these unique traits as so much mediated techno-digital data: "The possibility of repeating", writes Derrida (1990, 8), "and thus of identifying the marks implicit in every code, making it into a network [*une grille*] that is communicable, transmittable, decipherable, iterable for a third, and hence for every possible user in general".

The key signifiers that underpin all biometric technologies and that are constitutive of their system of conceptuality are *trace*, *secret* and *iterability*. I would argue, at this

juncture, that the aporetic logics of iterability, the trace and the secret vitiate any claims that a foolproof system can ever be built that is not also always already open to frauds and impostors. The very possibility of fraud and imposture is in-built within the unacknowledged metaphysics of presence of biometric systems. In what follows, I want to elaborate on this unacknowledged metaphysics of presence by focusing on so-called liveness testing in order to preclude instances of biometric identity fraud.

29.4 Signs of Life: The Alleged "Live" of Liveness Testing

In their chapter titled "Biometric Liveness Testings", Valorie S. Valencia and Christopher Horn (2003, 10) bring into focus the unsettling spectre of spoofs that haunts biometric systems:

Recent reports have shown that biometric devices can be spoofed using a variety of methods …. The security provided by biometric devices – that is, the level of confidence in the user's identity – is diminished if the devices can be readily circumvented. Liveness detection, among other methods, has been suggested as a means to counter these types of attacks.

Biometric liveness tests are automated tests to determine if the biometric sample presented to a biometric system came from a live human being – not just any live human being, however, but the live human being who was originally enrolled in the system – the "authentic live human being", if you will.

One way to defeat a biometric system is to substitute an artificial or simulated biometric sample for the biometric sample of the "authorised live human being". As such, liveness testing is a technology used to maximise confidence that individuals are who they claim to be, and that they are alive and able to make the claim.

"The fundamental faith of the metaphysicians", Nietzsche notes (1966, 10), "is *the faith in opposite values*". Inscribed in the above-cited Valencia and Horn passage is a metaphysics founded on the faith in opposite values: authentic/fake, live/dead and present/absent. These opposite values are presented as foundational categories that can be empirically verified. This metaphysical faith in opposite values is precisely what is undone by biometrics' dependency on the logic of iterability. Animating biometrics' liveness tests is a metaphysics of presence, in which an "authentic live human being" presents herself before the technology. Undivided from herself, fully in possession of her "proper" and "authentic" traits, the subject undergoing the liveness test presents herself in the full plenitude of her self-identical "liveness".

These biometric fraud detection tests are underpinned by the metaphysics of presence and, precisely because it is a metaphysics, it fails to deliver what it promises. As I argued above, for the biometric traits of a subject to be rendered legible as a biometric template within the system, they must assume the form of an iterable mark or signature. As iterable mark, a subject's biometric signature is always already inscribed by *différance*, in which the self-same is at once deferred and different from itself (Derrida 1986, 8–9). A subject's biometric signature must

conform to a grammatological understanding of "writing" that presupposes the "death" of a subject even as they present themselves "live" before the biometric system; in other words, the subject must "go through the detour of the sign" (the enrolment template lodged in the biometric system) in order to be intelligible as identifiable subject by the biometric system:

To be what it is, all writing must, therefore, be capable of functioning in the radical absence of every empirically determined receiver in general. And this absence is not a continuous modification of presence, it is a rupture in presence, the "death" or the possibility of the "death" of the receiver inscribed in the structure of the mark …

What holds for the receiver holds also, for the same reasons, for the sender or producer. To write is to produce a mark that will constitute a sort of machine which is productive in turn, and which my future disappearance will not, in principle, hinder in its functioning, offering things and itself to be read and to be rewritten (Derrida 1990, 8).

As I demonstrated above, the authenticating and identificatory logic of biometric systems is predicated on generating a template proxy of the subject. Encoded in this process is a series of aporetic effects that problematise liberal-humanist conceptualisations of both identity and the subject. The aporetic logic of iterability and citationality, whereby the veridicity of a subject's re-enrolling template is adjudicated precisely by its failure exactly to coincide with the original enrolment template, inscribes univocal conceptualisations of identity and the subject with a heteronomous law of the self-same-as-other. Indeed, the very status of the key signifiers of biometric identification and verification – uniqueness, authenticity and veridicity – are predicated on an unacknowledged dependence on the other: the self-same subject must generate a micrological series of citations-as-differentiations that de-totalise her identity, even as these citations-as-differentiations function to affirm the seeming univocality of identity.

Biometric systems of identification and verification are predicated on an Enlightenment understanding of the subject: the authorising logic of these systems is driven by the notion that, despite micro permutations, the empiricity of flesh (the iris, the face or the fingerprint) encodes an identity that is continuous or "identical" with itself throughout the subject's existence. Yet, as I demonstrated in my critique of the Enlightenment understanding of identity, this logic must be underpinned, simultaneously, by a dissemination and decentring of self-same identity. This other, heteronomous logic is perfectly encapsulated in the following biometric formula: "Identification is often referred to as *1*:*N* (*one-to-N* or *one-to-many*), because a person's biometric information is compared against multiple (*N*) records" (Nanavati et al. 2002, 12). One-to-*N* or one-to-many names the manner in which the unicity of identity is invested with the law of the other (signatory citation as different in every instance), of the other that guarantees the conditions of possibility for the self-same to be constituted as an identifiably unique identity, even as it opens up the same to a movement of discontinuity and dissimulation (across various institutional sites and biometric systems with every instance of re-enrolment).

The identity of the subject comes into being in this very movement of dissimulation: already in its algorithmic conversion, as an array of digital numbers it is

non-identical to itself. This is the crux of the matter underpinning the constitutive effects of the metaphysics of presence in the operations of biometrics: the somatic identity of the subject cannot present itself in the purity of an "uncontaminated" *physis*, that is, in terms of a purely "natural" body not always already culturally marked and discursively inscribed as a legible *body*. An uncontaminated and irreducibly pure *physis* would remain non-iterable and thus "illegible". In talking, then, of the somatechnics of biometrics, I am drawing attention to the iterable and thus tropic (because proxy-prosthetic) status of a subject's biometric identity/signature. In articulating the aporetic hinge between the originary and the reproducible (Pugliese 2005, 362), between the natural (*physis*) and the synthetic-prosthetic (*technè*), Derrida (2002a, 244) emphasises that the relation "is not an opposition; from the very first there is instrumentalization [*dés l'origine il y a de l'instrumentalisation*] … a prosthetic strategy of repetition inhabits the very moment of life. Not only, then, is technics not in opposition to life, it also haunts it from the very beginning". If a prosthetic strategy of repetition-as-instrumentalisation inhabits the very moment of life, then liveness testing can never fully circumvent the deployment of faux body parts and synthetic-prosthetics: the possibility of the proxy already marks and constitutes the very possibility of the body proper. Indeed, no body proper as such that is not always already inscribed by instrumentalisation and its prosthetic inscription by cultural systems and techniques of signification.

In their article, "Body Check: Biometric Access Protection Devices and Their Programs Put to the Test", Lisa Thalheim, Jan Krissler and Peter-Michael Ziegler have put to the test 11 biometric systems by generating digital spoofs and proxies and, in all cases, they managed to breach the system's security screening devices. In their tests, these researchers have outfoxed biometric protective programs and devices by "deceiving the systems with the aid of obvious procedures (such as the reactivation of latent images) and obvious feature forgeries (photographs, videos, silicon fingerprints)" (Thalheim et al. 2002). As they document in their article, they obtained "astonishing results by means of this approach" (Thalheim et al. 2002). Thalheim et al. proceeded successfully to spoof the biometric systems they tested by supplying a range of relevant biometric simulations. For example, in order to breach the liveness test of a facial scan system, they:

Simply shot a short .avi video clip with the webcam in which a registered user was seen to move his head slightly to left and right. As brief movements suffice for FaceVACS to consider an object alive and as the program engages in simple 3D calculations only, we were not particularly surprised by the success of our approach: Once the appropriate display-to-ToUcam distance had been found the program did in fact detect in the video sequence played to it a moving "genuine" head with a known facial metric, whereupon it granted access to the system. In a worst case scenario this state of affairs implies that a person without a professional background to movie making who had wielded a digital camera during a public meeting and there shot visual material of authorized personnel, to log on to a protected system, need only modify the acquired material slightly and transfer it to a portable PC (Thalheim et al. 2002).

The fact that Thalheim et al. are compelled to place the term "genuine" (head) in scare marks highlights the aporetic logic that haunts and inscribes biometric systems predicated on the binary oppositions "genuine" and "fake", "live" and "dead" "body" and "machine". And I reiterate the following Derridean citation in order to elaborate my critique of the metaphysics of presence in the context of biometric systems: "What holds for the receiver holds also, for the same reasons, for the sender or producer. To write is to produce a mark that will constitute a sort of machine which is productive in turn, and which my future disappearance will not, in principle, hinder in its functioning, offering things and itself to be read and to be rewritten" (Derrida 1990, 8).

As the production of an identificatory mark/signature is dependent upon the "disappearance" of the signatory subject (in order for the signature to be able to function as proxy in-lieu of the absent subject), this structural disappearance or "death" of the signatory subject is what ensures the very production of the biometric proxy *and* the possibility to trick the system with a dissimulation of the simulation. The structural need to produce a proxy of the subject at biometric enrolment generates the "possibility of disengagement and citational graft which belongs to the structure of every mark …. Every mark can be cited, put between quotation marks" (Derrida 1990, 12). In the context of biometric systems, the act of identity theft hinges precisely on the logic of the citational graft: the thief purloins another subject's biometric signature and presents it to the system with the hope that it will fail to read the quotation marks.

"An advantage of biometric authentication technologies", write Valencia and Horn (2003, 142) in their "Biometric Liveness Testing", "is that we can do something about it – we can incorporate automated liveness tests to minimize the effectiveness of artificial or simulated biometric specimens". The sort of entanglement of contradictory terms that is evidenced in this "solution" pervades the discourse of biometrics: "automated liveness tests" signals, paradoxically, the automated machining of the live, the technologisation of the body in order to attempt to differentiate between *soma* and *technè* and the living flesh and the dead simulation or prosthesis. Yet this metaphysics of pure and unmediated presence is incessantly undone by the fact that the liveness of the "here-now does not appear as such, in experience, except by differing from itself" (Derrida 2002b, xvii). The "traits" that Derrida (1990, 9, 10) grammatologically "recognize[s] in the classical, narrowly defined concept of writing, are generalizable. They are valid not only for all orders of 'signs' and for the entire field of what philosophy would call experience, even the experience of being: the above-mentioned 'presence' … there is no experience consisting of *pure* presence but only chains of differential marks".

The concept of pure, undifferentiated and non-technologised being is what underpins biometrics' metaphysical system of conceptuality. The biometric system deploys an "automated liveness" test in order to detect "*signs* of life": in other words, the in vivo must be rendered semiotically *in silico* in order to register as a "sign of life". The "bio" of bioinformatics is only ever available, as a culturally intelligible unit of information, through the indissociable transposition or transcoding of the one (bio) into the other (informatics) – that is, through an ineluctable process of somatechnicity.

The impossibility of the experience of unmediated being is underscored by the fact that the logic of general citationality constitutes the biometric system's unacknowledged conditions of possibility. The possibility of digital spoofing, as a form of "structural parasitism" (Derrida 1990, 17), is structurally in-built in the system. And, in placing biometric security systems through their paces, Thalheim et al. (2002) deploy a range of both serious and farcical tactics of parasitism and citational grafting, including breathing over the trace of a fingerprint in order to "revivify" it, grafting a fingerprint trace onto adhesive film, reactivating a latent image with a water-filled plastic bag or balloon and deploying an inkjet print of a human eye perforated with a miniature hole in order to trick an iris-scan system.

In their discussion of biometric templates, Lila Kari and Laura Landweber (2000, 414) argue that there is an "homology" between a subject's biometric template/signature and his or her DNA signature: "The complex structure of a living organism ultimately derives from applying a set of simple operations (copying, splicing, inserting, deleting, and so on) to initial information encoded in a DNA sequence". This homology, in fact, resonates along a number of levels. Biometric traits are viewed in terms of a subject's unique genetic and/or phenotypical features: "biometrics rely on genetics as the basis of various biometrics" (Woodward et al. 2003, 29). As I have argued elsewhere, in my grammatological deconstruction of genetics, DNA is only intelligible as a scientific object of inquiry through the deployment of a series of effaced metaphors predicated on writing, including genetic letters, codes, texts, polymerase proofreaders, spelling errors, traces and so on (Pugliese 1999). This homology between genetics and biometrics holds not only because both disciplines are critically dependent upon a textual economy of writing and *différance* in order to make legible their respective objects of inquiry but also because both disciplines are foundationally dependent on a metaphysics of "life" informed by an empirico-positivist biologism. In the fields of science and technology, whenever the problematic of "life" is invoked, a metaphysics of pure and unmediated biological presence is unreflexively called into "being". As Derrida (1976, 70) observes, "in all scientific fields, notably in biology, this notion [of presence] seems currently to be dominant and irreducible". Yet, as I demonstrated above, at the very moment that life, the living organism, is encoded in biometric language (or genetic text), it becomes inscribed in the movement of *différantial* deferral of and difference from the other; at the moment of biometric presentation, "there is no experience of *pure* presence but only chains of differential marks" (Derrida 1990, 10).

"Biometric authentication", explain Woodward et al. (2001, 11), "refers to *automated methods of identifying or verifying* the identity of a *living person in real time* based on a *physical characteristic* or *personal trait*". The identificatory machining or automation of the living person in real time encapsulates the non-negotiable aporias that inscribe biometrics, in which a subject's biometric *image file* is termed the *corpus* – that is, in which the *image* of a subject's bio-identificatory feature becomes, indissociably, her machined/automated corpus. Biometrics' techno-automated mediation of the "live" and "real time" signifies, in effect, that there can only ever be "an allegation of 'live'" and of "real time". Discussing the metaphysics of presence

in the contemporary configuration of "tele-techno-mediatic modernity" and its celebration of such things as "live" satellite-televisual transmissions, Derrida (2002c, 40) sardonically remarks "we should never forget that this 'live' is not an absolute live, but only a live effect [*un effect de direct*], an allegation of 'live'". The allegation of live captures the metaphysics of presence that unreflexively inform biometrics' faith in liveness testing (as the means whereby to circumvent digital spoofs and identity frauds). It is an *allegation of live* that animates biometric liveness testing as "to allege" signifies, in legal terms, "to assert without proof" and, simultaneously, to "cite, quote" (*Shorter Oxford English Dictionary* 1978). In other words, the very act of "live" authentication before a biometric system can only ever remain an assertion without absolute proof as it can only be performed through the grammatological process of template citation and signatory quotation, a process that irreducibly dissimulates both "life" and "authentic" identity and that structurally ensures that the "absolutely real present is already a memory": "there is no purely real time because temporalization itself is structured by a play of retention or of protention and, consequently, of traces …. The real time effect is itself a particular effect of 'différance'" (Derrida 2002c, 129).

This is not to reduce the liveliness of life to the operations of a homogenising textuality or totalising techno-discursivity. Rather, the liveliness of life must be viewed as what exceeds the algorithmic delimitations and empirico-positivist frames of the biometric sciences. "The *liveliness* of life", writes Levinas (1988, 162, 178), "is an incessant bursting of identification": "Is not the liveliness of life an excession, the rupture of the container by the uncontainable?" The excession of the liveliness of life signifies the impossibility of containing a subject's life within the calculable parameters of digitised "identity" categories/templates: already non-identical to itself, the liveliness of life inscribes itself in so many citational grafts, structural parasitisms and heteronomous traces, thereby dissimulating itself and exceeding the metaphysics of presence.

29.5 'Transductions of the Body, Infrastructural Normativities and Biometrics' "Extrinsic" Information

Because of its unacknowledged dependence on a metaphysics of presence, biometrics is structurally haunted by the threat of "spoofability". The spectre of this threat is what is driving the development of new biometric technologies designed to outfox frauds and impostors. A recently developed biometric system, vascular pattern recognition or vein pattern identification, is being touted as yet another system that "is difficult to forge": "vascular patterns are difficult to recreate because they are inside the hand and, for some approaches, blood needs to flow to register the image" (National Science and Technology Council 2006, 1). Another emerging biometric technology that is being promoted as offering spoof-detection capabilities is finger skin histology, which entails the imaging, through the use of optical coherence tomography, of the "internal structure of the skin of the finger":

The skin on the palmar side of the finger tips contains dermatoglyphic patterns comprising the ridges and valleys commonly measured for fingerprint-based biometrics. Importantly, these patterns do not exist solely on the surface of the skin – many anatomical structures *below the surface* of the skin mimic the surface patterns. For example, the interface between the epidermal and dermal layers of skin is an undulating layer made of multiple protrusions of the dermis into the epidermis known as dermal papillae. These papillae follow the same shape of the surface dermatoglyphic patterns and thus represent an internal fingerprint in the same form as the external pattern (Nixon et al. 2008, 414).

Biometrics' search to create a non-spoofable identificatory system has taken the technology below the surface features of the body (and its physiognomic and behavioural attributes) and into the seemingly non-replicable depths of the *soma*. Lodged in the depths of the *soma*, beyond the realm of replicable corporeal surfaces, is what Foucault (1975, 94) terms the "visible invisible" as that master metaphor that appears to promise a corporeal "truth" that is homogeneously self-identical and non-replicable. Vascular pattern recognition operates by "Using near-infrared light, reflected or transmitted images of blood vessels of a hand or finger [or face] are derived and used for personal recognition" (National Science and Technology Council 2006, 1). Yet, a subject's vascular patterns cannot simply signify in the self-evidence of their own unique corporeality. They must be "transduced", to use the apposite biometric term, by "combining geometry with underlying physiology" (Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics 2007, 52). The transduction of the physiological into the geometric is what enables the "visibilisation" of the invisible: the tropics of transduction, as fundamentally driven by the *turn* of metaphor, enable the somatechnical transmutation of the organic material of the body into intelligible data (that can be "read" by the biometric system) through a series of instrumental mediations. These mediations include the use of algorithms to remove "noise" (such as hair or shadows) and in order to "enhance" "the clarity of vascular patterns in captured images" (Choi and Tran 2008, 264).

There is, however, a prior process of mediation that antedates the mediations that I have just identified. Critical to this process of rendering the organic articulate and intelligible is language, as that other technology that has already inscribed the body even before the process of biometric scanning and algorithmic transduction has begun. Vascular pattern recognition and finger skin histology technologies come to a body that has already been techno-linguistically mediated before the fact of infrared scanning and optical coherence tomography. Infrared and tomographic scanning of the body's "invisible visible" can only take place as a coherent and intelligible techno-scientific operation after the fact of the discursive medico-anatomical mediation of the *soma*. Before the process of biometric infrared scanning and optical coherence tomography, the internal physiology of a subject's body has already been mapped (in anatomical atlases) and identified and rendered intelligible through a series of medico-anatomical terms: vascular pattern, blood vessels, blood flow, subcutaneous blood vessel pattern, haemoglobin of the blood, capillary tufts, dermal papillae and so on. This medico-anatomical lexicon constitutes the conditions of

possibility for biometrics to embark on its infrared and tomographic "descent" into the body's interior in order to extract its unique identificatory features. And, once again, these tropical transductions of the "raw" organic material of the *soma* cannot escape either the logic of iterability or its consequent spoofable effects.

The somatechnics of life ensure that the contours of the subject's body do not terminate at the threshold of the body; rather the contours extend beyond the physical parameters of the subject into the larger sociocultural domain, inflecting the operating parameters of biopolitical technologies determining critical question of knowledge/power. At the threshold of the *soma*, that empirical point of seeming terminus dividing the corporeal from the non-corporeal, the flesh is metaphorised into its other: *technè*. Inversely, *technè* is metaphorised as *soma*: in other words, what takes place is a *somatechnics of biometrics*. Even as biometrics dreams of the development of ever-new technologies designed to differentiate between "authentic" and "fraudulent" subjects, the technology's entire system of conceptuality is haunted by the ineluctable spectre of its absolute unthought: that the *soma* has always already been technologised before the fact of biometric scanning and template creation.

This absolute unthought is brought into critical focus by the division between "primary biometric information" and "extrinsic" or "ancillary biometric information" that underpins biometrics' system of conceptuality. Primary biometric information refers to the face, fingerprint or iris that has been biometrically scanned and processed, whereas extrinsic biometric information refers to "characteristics such as gender, ethnicity, height or weight of the user (collectively known as soft biometric traits)" (Nandakumar et al. 2008, 335). Posited as "extrinsic", "ancillary" and "soft", the inscriptive categories of ethnicity and gender are positioned as structurally separable from the biometrically scanned body. As such, these categories are what can be imported from "outside" of the scanned body as "add on" or "ancillary" information to the "primary" data of somatic identifiers: iris, face or fingerprint. Yet, as I have argued in the course of this essay, there is no such thing as a body that is not always already marked by a constellation of social descriptors (including ethnicity and gender) prior to the moment of biometric processing.

These descriptors are not extrinsic to the body; on the contrary, they constitute the body's a priori conditions of social signification and cultural intelligibility and, consequently, position the subject in determinate ways in the face of particular biometric technologies.

There is, furthermore, in this lacuna or systemic unthought that inscribes biometric systems of conceptuality, a type of contradiction that results from this positing of categories such as gender and ethnicity as "extrinsic" to the biometric body in question. In their essay, "Incorporating Ancillary Information", Karthik Nandakumar et al. (2008, 348) proceed to argue that: "Soft biometric traits are available and can be extracted in a number of practical biometric applications. For example, attributes like gender, ethnicity, age and eye color can be extracted with sufficient reliability from the face images. Gender, speech accent, and perceptual age of the speaker can be inferred from the speech signal". Framed as "extrinsic" to the biometrically scanned body, gender and ethnicity are simultaneously "extracted" from both the

face and the voice of the subject as self-evident categories "lodged" in the body in question. Positioned as "ancillary" to the body, yet these categories self-evidently inscribe and identify their subjects. Thus, in the illustrations that accompany Nandakumar et al.'s (2008, 347) text, a photograph represents "A scenario where the primary biometric identifier (face) and the soft biometric attributes (gender, ethnicity, eye color and height) are automatically extracted and utilized to verify a person's identity". The photographed subject's gender is named as "male" and the ethnicity as "Asian". Underpinning the "automatic extraction" of such categories as gender and ethnicity are tacit and normative knowledges that will enable the "automatic" identification of these same categories. The self-evident or received status of these tacit knowledges is what enables the process of "automatic" identification.

In this biometric system of conceptuality, it is self-evident what a male or female "looks" like; it is self-evident what a male or female "sounds" like. In both these cases, the category of the gender variant subject, who might "sound" like a male but "look" like a female, must remain unthought, as this subject falls outside the gender-normative assumptions encoded in the biometric system. And I invoke the gender variant subject not as some sort of eccentric anomaly that is marginal to the automated operations of biometric gender identification; on the contrary, at this critical juncture of automated, computational biometric gender identification, the gender variant subject, in crossing the self-evident attributes of heteronormative gender identities, effectively works to expose the occluded assumptions and tacit knowledges that proceed to inform the normative infrastructure/software of the biometric system. In her foundational work on transgender, Susan Stryker (2006, 3) underscores the power of transgender subjects to "reveal the operations of systems and institutions that simultaneously produce various possibilities of viable personhood, [whilst] eliminating others". In queering the heteronormative gender binaries that underpin the biometric system's process of automated gender identification, the gender-nonconforming subject is biometrically positioned as a subject that "does not compute" precisely as she/he brings into crisis the disciplinary operations of a system predicated on infrastructural heteronormativity and categorical, automated gender binaries.

The deconstructive force of the gender variant subject that I have invoked in this scenario is complicated, moreover, by the lived effects generated by the ongoing reproduction of normative gender categories and the consequent gender misrepresentations and discriminations, across the broad spectrum of technologies and institutions assigned with identificatory tasks (Stryker 1994; Prosser 1998). These lived effects are documented, for example, by Toby Beauchamp in the context of the intensification, post-9/11, of surveillance of transgender bodies by the US government. Beauchamp (2009, 359) draws attention to the manner in which gender-nonconforming bodies have been caught in the dragnet of the US Social Security Administration's "'no-match' letters to employers in cases where their employee's hiring paperwork contradicts employee information on file with SSA". As Beauchamp (2009, 359) explains:

The no-match policy aims to locate undocumented immigrants (and potential terrorists) employed under false identities, yet casts a much broader net. Because

conflicting legal regulations often prevent trans people from obtaining consistent gender markers across all of their identity documents, gender-nonconforming individuals are disproportionately affected by the policy, whether they are undocumented immigrants or not.

Beauchamp's use of the "no-match" category can be productively transposed to a critique of biometric automated gender recognition systems, precisely where an effective "no-match" occurs between the normative gender assumptions of the operating software and the embodied, gender variant subject screened by the technology.

As with the question of gender, in this biometric schema of "extrinsic" or "ancillary" biometric traits, the criteriological parameters that configure specific ethnic groups remain self-evident. There is no question at all that one can "automatically" identify someone who is "Asian", simply, I assume, by relying on stock taxonomies of visible phenotypical descriptors; in other words, a tacit ontology and taxonomy of visible racial attributes self-evidently signify one's ethnicity. And it is precisely at these junctures that such "extrinsic" identificatory information as gender and ethnicity are shown to be fundamentally inscribed as a priori, infrastructural normativities "intrinsic" to the classificatory and identificatory operations of biometric technologies. Even as biometricians labour to "import" these "extrinsic" attributes from outside the primary operations of biometrics, they are simultaneously shown to be always already inscribed on the body as self-evident, normative attributes that can be "automatically" extracted.

29.6 Conclusion

I end this chapter with one more moment of iteration: the *soma* has always already been technologised before the fact of biometric visual scanning and template creation. It is the very technologisation of the *soma* that renders a subject biometrically legible as such. The technologisation of the body is instrumental in the construction of the legal category of the subject, enabling their entry into the symbolic social order. Biometrics' visual templates of enrolled subjects are constitutive of the legal subject as representational being, as actor and agent in the sociolegal theatre. Yet, precisely because biometric technologies are critically reliant on a semiotic economy of figures, images and signatures, biometric systems are permanently open to the possibility of citational grafts, structural parasitism and identity frauds. Biometrics is, as a technoscience, thoroughly dependent on a metaphysics of presence that is predicated on the onto-theology of unmediated essence; this is perfectly encapsulated in the biometric formula: "something you are, a biometric" (Woodward et al. 2001, 11). Finally, as biometrics' invocation of liveness testing remains nothing more than another animation of the metaphysics of presence, a mere allegation of "live", it can never absolutely guarantee that the figure before it is not life itself dissimulating its simulation.

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Chapter 30
Visual Legal Commentary

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Abstract Much contemporary legal commentary contains nontextual information—everything from graphs and cartoons to geometric diagrams of the relations among legal concepts. No comprehensive account of this practice exists, so that most of those participating in it today are unaware of the rich tradition from which it derives. This chapter explores that tradition, explaining the relations between visual legal commentary and a broader tradition of visual commentary, as well as the important relations between visual legal commentary and the historical consolidation of legal expertise.

30.1 Introduction

It is common to observe that in the courtroom and classroom, lawyers and law professors are using new visual aids and using old ones in new ways. Less often remarked is the similar shift occurring in those most traditional artifacts of the legal profession: texts. In the past few decades, legal casebooks and scholarly articles have included increasingly diverse forms of nontextual information—everything from graphs and cartoons to geometric diagrams of the relations among legal concepts. This phenomenon is the subject of this chapter.

No comprehensive account of this practice exists. Might this be because the use of visual material in texts is not really a distinct "practice"? A graph showing accident rates, for example, could be used on a projector screen in a courtroom or classroom or in a printed casebook with little alteration. Presumably the graph is useful in each context for similar reasons: it presents complex information more concisely

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than a verbal description could. But nontextual printed commentary is different in important ways from visual aids in the courtroom and classroom. For one thing, it involves communication to a solitary reader rather than a live audience. The situational cues to reading these images that might be present in a public context are absent when a reader confronts a book or article alone. And while casebook graphics are sometimes the subject of classroom attention, their semiotic features are never a focus. In contrast, the semantics and pragmatics of legal text often are a focus of class discussion.[1]

In addition, although some aspects of visual communication in legal commentary are innovative, many instances of the practice, perhaps most, stem from a rich tradition unknown to most of those participating in it today. In other words, it is not so much that visual commentary in texts is akin to other more basic forms of visual communication—those other forms are in fact part of a tradition that lives on most directly in visual legal commentary. Understanding this continuity can clarify aspects of both printed and displayed visual commentary that would remain obscure if we considered visual communication in law to be simply a manifestation of a new zeitgeist. This chapter seeks to contribute to that understanding by explaining how visual legal commentary is in turn a special case of a more general tradition of visual commentary, as well as its important relations to the historical consolidation of legal expertise and the forms of thought involved in the exercise of that expertise.

In Sect. 30.2 of this chapter, I outline the scope of the practices I am considering. Section 30.3 addresses their history. I consider the ancestors of the practices described in Sect. 30.2, starting in Western antiquity, as well as significant aspects of their development to the present day; I also consider the ways in which this development is bound up with the history of legal professionalization and scholarship in the United States. In Sect. 30.4, based on this historical picture, I reexamine the implications of these practices.

30.2 Scope of the Practice

What counts as "visual legal commentary"? First, it is one form of *legal commentary*, commentary on law—the kind of discourse that appears in scholarly journals but also in casebooks and treatises, explaining and analyzing the content of law or arguing for proposed alterations to it. Second, visual legal commentary is *visual* commentary—it departs in some respect from purely verbal text. Of course, textual legal commentary is visible and visual, too. But while we customarily treat text as translatable into oral commentary without alteration or loss of information, we do not treat diagrams or typographical features—or even equations—in this way. It therefore makes sense to treat any departure from the Western print

[1] See, for example Elizabeth Mertz, The Language of Law School: Learning to "Think Like a Lawyer" 21–22, 58–59, 64, 82, 95 (2007).

convention of blocks of "continuous prose"[2] as "visual" in a sense distinct from textual prose. Visual commentary in this sense includes illustrative forms such as photographs, as well as graphs and charts. But it also includes tables of textual or numerical information; marginal glosses; document reproductions, such as reproduced transcripts, receipts, and pleadings, which occupy an unusual niche between illustration and text; and mathematical or verbal equations set off from typeset prose, which have formal similarities to these other practices.[3]

While some of the uniquely visual features of legal text have been an explicit focus of scholarship,[4] as have certain forms of mimetic visual supplementation to legal commentary,[5] no comparable attention has been devoted to nonmimetic visual commentary. Yet this sort of material seems always to have been present in legal commentary. A number of deeply influential American law review articles, for example, include material of this kind.[6] And the tradition of reliance on it is remarkably continuous. Every volume of the Harvard Law Review since the first, more than 120 years ago, has devoted between around .5 and 3% of available pages to some kind of material of this form, even as the periodical itself has undergone massive format shifts.[7] But while the rate of including such material has been constant, the type of material included has not. At all times, representational illustrations have been far less common than other departures from continuous prose. The most common form of visual commentary has always been the simple table composed of figures, text, or a combination.[8] In the early

[2] This phrase is used by Michael MacDonald-Ross, Graphics in Texts, 5 Rev. of Res. in Educ. 49, 76 (1977) (noting that typographers' core expertise is in "the setting of continuous prose").

[3] On the essentially textual nature of mathematical symbols and notation systems, see, for example, Brian Rotman, Mathematics as Sign: Writing, Imagining, Counting ix, 12 (2000).

[4] See, for example, Peter Tiersma, The Textualization of Precedent, 82 Notre Dame L. Rev. 1189 (2007); Bernard Hibbitts, Last Writes? Re-assessing the Law Review in the Age of Cyberspace, 71 N.Y.U. L. Rev. 615 (1996).

[5] See especially Peter Goodrich, A Theory of the Nomogram, in Law, Text, Terror: Essays for Pierre Legendre 13 (Peter Goodrich, Lior Barshack, & Anton Schutz eds., 2006); Jennifer L. Mnookin, The Image of Truth: Photographic Evidence and the Power of Analogy, 10 Yale J.L. & Human. 1 (1998); Ana Laura Nettel, The Power of Image and the Image of Power: The Case of Law, 21 Word & Image 136 (2005).

[6] For example, Lon L. Fuller, The Forms and Limits of Adjudication, 92 Harv. L. Rev. 327 (1978) (including text in tabular form illustrating modes of participation in various forms of social ordering); Wesley Newcomb Hohfeld, Some Fundamental Legal Conceptions as Applied in Judicial Reasoning, 23 Yale L.J. 16, 30 (1913); Karl Llewellyn, Remarks on the Theory of Appellate Decisions and the Rules or Canons About How Statutes Are to Be Construed, 3 Vand. L. Rev. 395, 401–06 (1950); Charles Warren, New Light on the History of the Federal Judiciary Act of 1789, 37 Harv. L. Rev. 49, 87 (1923) (including photostat of manuscript version of 1789 Judiciary Act).

[7] For example, the law review has expanded from roughly 500 pages per volume in its first decade of publication to 2000 or more pages per volume in its most recent decade.

[8] Since 1949, for example, the Harvard Law Review's retrospective of the Supreme Court's previous term has included several pages of tables of data on the opinions issued that term. This practice originated in a 1925 article. Felix Frankfurter & James M. Landis, The Business of the Supreme Court of the United States—A Study in the Federal Judicial System, 38 Harv. L. Rev. 1005, 1016–17 n.35, 1053–54 (1925).

years of the journal, the second most common form of visual commentary was the document reproduction. Starting around the 1930s, graphs, equations, and geometrical diagrams started to appear. In the early 1970s, forms borrowed from other scholarly and technical discourses, particularly equations and graphs, became much more common, rivaling and sometimes exceeding tables in frequency of use.[9] These sorts of forms now appear nearly as often in articles on topics in constitutional law, jurisprudence, and procedure as in discussions of apparently more technical topics such as corporations, tax, and antitrust law.

The consistency of these practices in modern legal scholarship is just the most recent chapter in a venerable tradition. Influenced by the formatting of works by the French educator Peter Ramus, early legal commentary in English devoted significant space to devices departing from continuous prose. Abraham Fraunce's The Lawier's Logicke (1588), an early exposition of legal reasoning, included not only the ornamental capitals and glosses common in contemporary books but also bracketed outline-style trees, scores of pages long, schematizing the logical structure of exemplary cases.[10] The precursors of genealogical trees, outlines, and flowcharts and similar bracketed outlines also appeared in Coke's Institutes (1656).[11] They remained common in generation after generation of English, and then American, legal educational materials, including David Hoffman's A Course of Legal Study (1817).[12] Although their omnipresence faded when Christopher Columbus Langdell's case-focused system displaced Hoffman's at the end of the nineteenth century,[13] Ramist trees were used into the early twentieth century in jurisprudence treatises,[14] and bracketed outlines are a familiar feature of scholarship and educational materials.

Since their appearance around the same time as Langdell's new educational model and the modern American law review,[15] American casebooks in nearly every subject have included visual commentary. Visual material in early casebooks

[9] For example, the first use of economic box diagrams in the Harvard Law Review was in 1971. Laurence H. Tribe, Trial by Mathematics: Precision and Ritual in the Legal Process, 84 Harv. L. Rev. 1329, 1387–88 (1971). In economics, box diagrams were first used in the late nineteenth century. See infra notes 75–76 and accompanying text.

[10] Abraham Fraunce, The Lawier's Logike, Exemplifying the Praecepts of Logike by the Practice of the Common Lawe 101–51 (1588).

[11] See, for example, Sir Edward Coke, I Institutes, facing fol. 1 (1656).

[12] See David Hoffman, A Course of Legal Study; Respectfully Addressed to the Students of Law in the United States 34–35, 37–38, 60, 99–101, 150–51, 188 (1817). On Hoffman's influence, see M.H. Hoeflich, Law & Geometry: Legal Science from Leibniz to Langdell, 20 Am. J. Legal Hist. 95, 112–17 (1986); Steve Sheppard, Casebooks, Commentaries, and Curmudgeons: An Introductory History of Law in the Lecture Hall, 82 Iowa L. Rev. 547, 571 (1997). Around the same time, Bentham used the same device. Jeremy Bentham, Chrestomathia, or An Analysis of Human Understanding (1816).

[13] Sheppard, supra note 12, at 588–89.

[14] See, for example, Thomas Erskine Holland, The Elements of Jurisprudence 167, 337 (12th ed., 1917); John Salmond, Jurisprudence 19, 83, 157, 164, 226–27, 251, 396, 413–15, 447–48, 497, 581, 629, 707 (J.L. Parker ed., 9th ed., 1937).

[15] See Hibbitts, supra note 4; Sheppard, supra note 12.

consisted mostly of tables[16] and reproductions of legal documents, such as pleadings.[17] But since the 1970s and 1980s, as in law reviews, visual commentary in casebooks has become increasingly common and diverse in a wide range of subject areas.[18]

Over the past 40 years or so, then, legal academics have been using new forms of visual commentary—but this practice developed gradually out of a tradition that is centuries old. What is new is not departures from blocks of continuous prose but the variety of ways in which that departure occurs. To make sense of this development, the rest of this chapter explores both the tradition of offering visual commentary and the significance of its apparent recent diversification in legal materials. Because the phenomenon involves both continuity and change, I consider it developmentally. But at least in recent history, it has also been a pervasive practice, so I examine it as one component of a system of practices controlling expertise in law, not just as a set of tools for achieving particular communicative objectives in appropriate contexts.[19]

Matters are complicated by the fact that the vocabulary suited to this exploration developed from the same intellectual and material traditions that have produced the

[16] See, for example, Gerard Brown Finch, A Selection of Cases on the English Law of Contract 10, 495 (Richard Thomas Wright & William Warwick Buckland eds., 2nd ed., 1896) (including balance sheet and transcript using brackets).

[17] See, for example, Austin Wakeman Scott, A Selection of Cases and Other Authorities on Civil Procedure in Actions at Law 15–16, 171, 199, 209, 521, 522 (1915) (reproducing pleadings); Lawrence B. Evans, Leading Cases on American Constitutional Law xxxiv–xxxv (2nd ed., 1925) (reproducing Bill of Rights, with brackets gathering signatures).

[18] See, for example, John E. Cribbett & Corwin W. Johnson, Cases and Materials on Property 607, 775, 1340–42, 1348, 1356, 1359–60, 1368–69, 1371–73, 1515–17, 1532–33, 1542–45 (5th ed. 1984) (including plat, maps, abstract diagrams, and document reproductions); Jesse Dukeminier & James E. Krier, Property passim (5th ed., 2002) (including 98 pages of visual materials); William N. Eskridge, Jr., & Philip P. Frickey, Cases and Materials on Legislation: Statutes and the Creation of Public Policy 29, 48, 55–56, 63–64, 69, 104, 153, 705–07, [19]–[58] (2nd ed., 1995) (including flowchart, cartoon, text tables, preference scales, maps, document reproductions, and text and figure tables); E. Allan Farnsworth & William F. Young, Cases and Materials on Contracts 152–53, 169, 193, 235, 279, 454, 456–57, 721, (3rd ed. 1980) (including economic box diagram, document reproductions, and text and figure tables); Lon L. Fuller & Melvin Aron Eisenberg, Basic Contract Law 260–61, 402, 414, 724–25, 727, 729, 833, 910 (4th ed., 1981) (including Ramist tree, figure tables, and balance sheets); Charles O. Gregory, Harry Kalven, Jr., & Richard A. Epstein, Cases and Materials on Torts 217, 639, 650, 652–53, 850, 870 (3rd ed. 1977) (including tables of text and figures, document reproductions, and equations); Charles B. Nutting & Reed Dickerson, Cases and Materials on Legislation 202, 290–91, 489, 492, 495–96, 545, 639–42 (5th ed. 1978) (including flowchart, cartoon, abstract diagrams, and text and figure tables); Jack B. Weinstein et al., Cases and Materials on Evidence 12, 62, 176–78, 337, 599, 1163, 1206 (8th ed., 1988) (including text and figure tables, document reproductions, cartoons, and ad hoc diagrams); Stephen C. Yeazell, Civil Procedure 19–20, 23–24, 57, 59, 71, 149, 175–77, 183–84, 205, 219, 222–23, 231, 236–37, 247–48, 262–65, 292, 298, 340–45, 552, 745, 760, 764–65, 769, 793, 816 (7th ed. 2008) (including Venn diagrams, charts, maps, text tables, and document reproductions).

[19] A number of commentators have treated visual commentary in this way. See, for example, James D. Gordon III, Teaching Parol Evidence, 1990 B.Y.U. L. Rev. 647 (1990); William H. Lawrence, Diagramming Commercial Paper Transactions, 52 Ohio St. L.J. 267 (1991); Laurence H. Tribe, Triangulating Hearsay, 87 Harv. L. Rev. 957, 959 (1974).

practices in question. In Sect. 30.3 below, I describe this complex process, beginning in antiquity and moving to the present day. In Sect. 30.4, I return to the practices discussed here, examining their implications in light of this tradition.

30.3 Histories of Visuality and Commentary

To date, discussions of visuality in law have been of two general kinds. One considers the relationship between images and law, focusing on iconic and emblematic modes of visual representation.[20] The other approach, a text-focused one, considers either how legal language refers to visibility (focusing on the referential content of legal text)[21] or the material history of legal publication (focusing on the visible form of legal prose).[22] None of this work has much to tell us about the practices described in the previous section, which are neither mimetic, like illustrations, nor verbally textual. In this section, therefore, I draw on work from several disciplines to trace two related histories—that of diagrammatic material culture, the tradition lying behind nonverbal communication in innumerable contexts, and that of professional discourse, the tradition lying behind the generation and consumption of legal commentary itself.

The history presented here has limitations. Space constraints necessitate an abbreviated account. In part for this reason, I focus on Western culture and on American culture for more recent periods. In addition, the more historically remote the practices described, the less their functions can be described with certainty. Some have argued that when we see, for example, what looks like a grid in premodern materials, we cannot assume it functioned the same way for its original users as it does for us.[23] While acknowledging this possibility, I assume that even tentative analysis of earlier practices can provide us with a richer understanding of contemporary ones; more recent practices share many formal features with earlier practices from which it is possible to show that they emerged gradually.[24]

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[20] See, for example, Hampton Dellinger, Commentary, Words Are Enough: The Troublesome Use of Photographs, Maps, and Other Images in Supreme Court Opinions, 110 Harv. L. Rev. 1704 (1997) (discussing, inter alia, maps as well as photographs but focusing on diagrammatic representation as a misleading or degenerate form of communication); Mnookin, supra note 5; Nettel, supra note 5.

[21] See especially Anita Bernstein, The Representational Dialectic (With Illustrations from Obscenity, Forfeiture, and Accident Law), 87 Cal. L. Rev. 305 (1999); Bernard J. Hibbitts, Making Sense of Metaphors: Visuality, Aurality, and the Reconfiguration of American Legal Discourse, 16 Cardozo L. Rev. 229 (1994); cf. Pierre Schlag, The Aesthetics of American Law, 115 Harv. L. Rev. 1045 (2002).

[22] See, for example, Richard J. Ross, The Commoning of the Common Law: The Renaissance Debate Over Printing English Law, 1520–1640, 146 U. Pa. L. Rev. 323 (1998); Tiersma, supra note 4.

[23] See especially Walter J. Ong, System, Space, and Intellect in Renaissance Symbolism, Cross Currents VII 121 (1957) [hereinafter Ong, System]; Walter J. Ong, Orality and Literacy: The Technologizing of the Word (1982).

[24] See L. Bagrow, The Origin of Ptolemy's Geographia, 27 Geografiska Annaler 318 (1945).

I begin, in Sect. 30.3.1, with an account of visual explanatory practices in antiquity. Section 30.3.2 turns to the period between the twelfth and seventeenth centuries in Europe. I consider scholarly accounts of the significance of developments in visual practices and institutional structures during this period and the contributions of three major figures to the tradition of visual commentary. Section 30.3.3 addresses the eighteenth and nineteenth centuries, which witnessed two key developments: an increase in the variety of forms of diagrammatic communication and a similar proliferation in the number of sharply defined occupational and scholarly fields—the emergence of modern professions and disciplines, the market for commentary. Both of these developments are linked to the emergence of what has been described, after Michel Foucault, as a "biopolitical" perspective on human life and social organization.[25] In Sect. 30.3.4, exploring contemporary consequences of these developments, I discuss the resources offered by three academic perspectives (semiotic, historical-cultural, and psychological) for the practices described in Sect. 30.2.

30.3.1 Visual Commentary in Antiquity

Several practices from the centuries just before and after the beginning of the Common Era anticipate the practices found in modern legal commentary, including the plane geometry of Euclid; the square of opposition, which, together with Euclid-derived approaches, led ultimately to the use of diagrams in logical analysis; and the "Porphyrian tree," a figure developmentally linked to many modern diagrammatic techniques, if less familiar to us now. These devices, and others, illustrate some of the most basic semiotic functions of these practices.

Euclid's Elements, written around 300 BCE in Egypt, has been called the most influential textbook ever written.[26] Both the original Greek manuscript and later versions are full of figures, the diagrammatic circles, triangles, and quadrilaterals familiar to modern students of plane geometry. Euclid's work presented geometry as a matter of inferences from axioms and established the conceptual model of reasoning as deduction that continues to structure not only plane geometry but also, on many accounts, legal reasoning.[27] The Elements is also arguably the earliest Western example of the use of diagrams not as mere illustrations for text but as integral aspects of the proof process. Euclid's figures function as nondiscursive demonstrations of his deductive proofs.[28]

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[25] See especially Michel Foucault, The History of Sexuality: An Introduction, Volume I 139–45 (Robert Hurley ed., 1978).

[26] Carl B. Boyer, A History of Mathematics 100, 119 (2nd ed. 1991)

[27] See Hoeflich, supra note 12, at 99–102.

[28] See James Robert Brown, Illustration and Inference, in Picturing Knowledge: Historical and Philosophical Problems Concerning the Use of Art in Science 250 (Brian S. Baigrie ed., 1996); Thomas M. Humphrey, The Early History of the Box Diagram, 82 Fed. Res. Bank of Richmond Econ. Q. 37 (1996).

Inference and diagrammatic visibility are also wedded in the "square of opposition" attributed to Apuleius of Madaurus[29] and still familiar to modern semioticians.[30] This device dates at least to Apuleius's description, in the second century CE, of a method of representing Aristotle's distinctions among types of propositions in order to grasp the relationship between opposition and syllogistic reasoning.[31] Apuleius's text provided verbal instructions for constructing the figure, instead of the figure itself, a technique that continued to be used for centuries, including by Galileo in the seventeenth century.[32] (Many later users of the square of opposition, of course, have included it as a visible quadrilateral diagram in their texts.) Apuleius's descriptive approach suggests the pedagogical utility of a spatialized understanding of abstract concepts; by directing readers to engage in constructive activity, it emphasizes the effort required to grasp the concepts. In both guises, the square is a pedagogical tool that makes use of nontextual visuality.

Both Euclid's figures and Apuleius's square are methods of displaying the necessary quality of particular logical relationships. So too is the Porphyrian tree, a device originating in remarks in the introduction to Aristotle's Categories (Isagoge) written by the Neoplatonist Porphyry in the third century BCE.[33] Like Apuleius's square, Porphyry's "tree" of definition, part of his explanation of Aristotle's doctrine of substance, was initially only described; the Isagoge used spatialized terms to describe the abstract relationships among categories and genera "below" them, nesting the distinctions in a long sequence of subdivisions. Later translators of Porphyry, such as Boethius, included figural displays of the same tree and presented the figure as not just analytically but normatively significant, a proof akin to Euclid's of the natural hierarchy of the world.[34] Both the tree's form and its normative logic persist in a variety of forms, including genealogical charts[35] as well as the structure of legal doctrine and reasoning.[36]

Initially, Apuleius's square and Porphyry's tree were verbal descriptions of figures. Other antique devices making use of the relations between abstraction and spatial relations were nonverbal from the start. The ars memoriae is one example: not a visual practice but a mnemonic one, it relies upon human visual capacities to

[29] David Londey & Carmen Johanson, Apuleius and the Square of Opposition, 29 Phronesis 165, 166–67 (1984).

[30] See, for example, Algirdas Greimas, On Meaning: Selected Writings in Semiotic Theory xiv, 49 (Paul J. Perron & Frank H. Collins trans., 1987).

[31] Aristotle, On Interpretation, chs. 6–7 (J.L. Ackrill ed., 1963).

[32] See David R. Olson, The World on Paper: The Conceptual and Cognitive Implications of Writing and Reading 219–21 (1996).

[33] Porphyry's Introduction (trans. & introd. J. Barnes, 2003).

[34] Boethius, Commentaries on Isagoge (S. Brandt ed., 1906).

[35] See Linton C. Freeman, The Development of Social Network Analysis: A Study in the Sociology of Science 21 (2004) (discussing roots of social network diagrams in ninth century European lineage charts).

[36] See, for example, J.M. Balkin, The Crystalline Structure of Legal Thought, 39 Rutgers L. Rev. 1 (1986); Duncan Kennedy, A Semiotics of Legal Argument, in Legal Reasoning: Collected Essays 87 (2008); Schlag, supra note 21.

assist recall.[37] Concrete nonverbal devices were used, too; we know that Egyptian city planning and cartography (in Ptolemy's Geographia, from the first century CE) used grids to communicate about spatial relations.[38]

It is difficult to be sure of the original semiotic functions of described figures, like Apuleius's and Porphyry's. But it is also impossible to be certain that figures like those of Euclid and Ptolemy functioned for their contemporaries as they do for us. The transformation of described figures into literal ones during the period described next might or might not betoken a transformation in individuals' relationship to visible figures as well as conceptual ones.[39] We can be more confident about the implications of the specific practices discussed in Sect. 30.3.2, however, since it is during this more recent period that the discourses in which such practices were embedded, including legal and academic discourse, began to assume the forms they have today.[40]

30.3.2 The Early Modern Watershed

Scholars disagree on whether visual practices that emerged during the early modern period in Europe changed Western culture in a fundamental way. Both those who perceive radical transformation in this period[41] and those who insist that the Western passage into modernity was more gradual[42] or conflicted[43] find support for their

[37] Frances Yates traced the practice to the Egyptian Simonides of Ceos, who is said to have been able to recollect the identities of guests at a dinner party based on their positions at the dinner table, despite their being injured beyond recognition by a volcanic eruption, sometime around 500 B.C.E. Frances A. Yates, The Art of Memory 1–2, 27–30 (1966).

[38] On city planning, see H. Gray Funkhouser, Historical Development of the Graphical Representation of Statistical Data, 3 Osiris 269, 273 (1937). On the influence of Ptolemy, see Samuel Y. Edgerton, Florentine Interest in Ptolemaic Cartography as Background for Renaissance Painting, Architecture, and the Discovery of America, 33 J. Soc. Architectural Historians 275, 278 (1974); David Turnbull, Cartography and Science in Early Modern Europe: Mapping the Construction of Knowledge Spaces, 48 Imago Mundi 5, 14 (1996).

[39] Compare Ong, System, supra note 23, whose argument parallels Elizabeth Eisenstein's, with Anthony T. Grafton, The Importance of Being Printed, 11 J. Interdisc. Hist. 265 (1980) (review of Elizabeth L. Eisenstein, The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early Modern Europe (1979)).

[40] See Harold J. Berman, The Origins of Western Legal Science, 90 Harv. L. Rev. 894 (1977).

[41] In 1952, Erwin Panofsky argued that the development of linear perspective in fourteenth-century Italy made the scientific revolution possible. See Erwin Panofsky, Artist, Scientist, Genius: Notes on the Renaissance Dammerung, in The Renaissance: Six Essays 121 (Wallace K. Ferguson et al. eds., 1962). An argument for seismic change traceable to print technology is associated with Elizabeth Eisenstein, see Eisenstein, supra note 39, although Walter Ong earlier argued along similar lines, see, for example, Ong, System, supra note 23.

[42] See, for example, Grafton, supra note 39; Michael S. Mahoney, Diagrams and Dynamics: Mathematical Perspectives on Edgerton's Thesis, in Science and the Arts in the Renaissance 198 (J.W. Shirley & F.D. Hoeniger eds., 1985).

[43] See, for example, Bernstein, supra note 21 (arguing that print encouraged association of text with truth and image with illusion); Peter Goodrich, Critical Legal Studies in England: Prospective Histories, 12 Oxford J. Legal Stud. 195, 225 (1992).