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Patent Claim Interpretation After Markman - How Have the Trial Courts Adapted?

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I. The Markman Decision

A. Factual Setting and the Trial Court Ruling

Herbert Markman invented a system to monitor and report the status, location and movement of clothing in a dry-cleaning establishment. Markman's system consisted of a keyboard and a data processor which could track input through bar coding. After the initial "intake" using a keyboard, employees of the dry-cleaner using Markman's system would log the progress of each article of clothing by running bar coded tags generated using the system past a bar code reader at each step of the

[*156] way. Markman obtained a patent on his system. n2 Markman's patent had one independent claim which delineated the information that was tracked as including a "description of each of said articles" associated with the transaction. The claim also specified a data processor which included "means to maintain an inventory total."

Westview Instruments developed and sold two devices which, working together, also used a keyboard and a bar coder in the dry-cleaning business. With Westview's system, the dry-cleaning attendant would enter information about the customer and the articles to be cleaned on a keyboard. As with Markman's system, the Westview device would generate a bar-coded tag which would then be attached to the clothing. The difference, which proved to be critical, was that the Markman system actually created a listing of the articles of clothing which were "in progress" at any particular time, whereas the Westview system generated invoice information and retained in memory only the dollar amount to be charged to the customer for the job. n3

Markman sued Westview for patent infringement. He presented testimony at trial through experts, including the inventor and a patent lawyer, on the patent and its claims. At the close of the case, the trial judge entered judgment as a matter of law for Westview, holding that, based on the proper interpretation of the claims, the Westview system did not infringe the Markman patent.

At the heart of the dispute was the meaning of the word "inventory" as used in the operative claims of the Markman patent. Markman contended that it encompassed the invoice totals that were retained in memory by one of the devices in the Westview tracking system. Westview contended that it meant articles of clothing, which Westview's system did not track as such. The trial judge held for Westview, ruling that the term "inventory" as used in the claims required tracking of articles of clothing, not dollar amounts.

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B. The federal Circuit's Opinion

The Court of Appeals for the Federal Circuit reviewed the trial court's decision and affirmed the trial court over several strong dissents. n4 The appellate court dealt with two issues: (1) whether the plaintiff had a right to a jury determination of the meaning of the patent claim, n5 and (2) whether the trial court correctly interpreted the word "inventory" as necessarily including a list of articles of clothing. n6 The first issue was the one the Supreme Court would later focus on exclusively. n7

1. The Federal Circuit Majority's analysis of the right to a jury trial on claim construction

The majority began by noting that the Federal Circuit itself had not been entirely consistent in its treatment of whether claim interpretation was an issue for the court or for the jury. n8 It then questioned the precedent cited for the leading decision permitting the jury to construe the claims, n9 pointing out that the Supreme Court had repeatedly treated patent claim interpretation as a matter of law strictly for the court. n10

The majority went on to point out the policy benefits of reserving patent claim construction for the court: reasonable certainty for competitors as to what is infringing and what is not, together with the assurance that a judge trained in the law would analyze the patent and apply established rules of construction. n11 In a later portion of the opinion, the majority explained why its ruling did not violate the plaintiff's Seventh Amendment right to a jury trial, rejecting arguments which analogized patent claim construction to the search for the parties' intent in a contract. The majority instead analogized patents to statutes since their judicial interpretations are similar. n12

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The conclusion and holding of the majority was that "in a case tried to a jury, the court has the power and obligation to construe as a matter of law the meaning of language used in the patent claim." n13

2. The Federal Circuit's claim interpretation

The Federal Circuit then reviewed the trial court's claim interpretation de novo. n14 The court noted with approval that the trial court had considered the claims themselves, the specification and the prosecution history, together with expert testimony as to how those skilled in the art would interpret the claims. n15 Extrinsic evidence including inventor testimony, dictionaries and learned treatises was distinguished as helpful to explain scientific principles. n16 The majority cautioned, however, that extrinsic evidence is to be used in understanding the patent and "not for the purpose of varying or contradicting the terms of the claims." n17

Having set forth these guidelines on what should or could be considered, the majority had little difficulty concluding on the basis of the specification and the prosecution history that the term "inventory" meant exactly what Westview said it meant: a list of articles of clothing. n18 In the process, the majority went out of its way to reject the testimony of "patent law experts" (and inventors), especially where it perceived that the testimony was inconsistent with the specification and prosecution history for the patent. n19

3. The Minority opinions

Judge Mayer concurred in the result, but disagreed strongly with the majority's reasoning in eliminating the jury from patent claim construction. n20 He characterized the result as "a sea change in the course of patent law that is nothing short of bizarre," n21 and professed a strong

[*159] belief that the participation of the jury in the determination of genuine factual issues that may arise relative to claim interpretation was mandated by the Seventh Amendment. n22 Judge Mayer also pointed out that because the meaning of the term "inventory" was clear enough from the specification and the prosecution history, there was no need even to reach the issue of the relative roles of judge and jury in Markman itself. n23 Judge Rader stressed this point as well in a limited concurring opinion. n24

Judge Newman delivered a lengthy dissent arguing for a remand to the district court for a determination as to whether the jury's verdict was supported by substantial evidence. n25 Judge Newman stressed the distinction between legal "construction" of claims and factual "interpretation" of claim language, n26 and then enumerated in great detail the various sources of evidence available for consideration in the context of claims interpretation. n27

C. The Supreme Court opinion

The Supreme Court accepted certiorari and affirmed. n28 The unanimous Court agreed with the Federal Circuit majority that the interpretation of patent claims was exclusively within the purview of the court and was not to be left to the jury. n29 Most of the opinion itself dealt with the Seventh Amendment questions. n30

The Court discussed at some length the issue of what was and was not triable to a jury before the adoption of the Constitution. n31 The Court explicitly declined to rule on what other questions need not be tried to a jury, and also declined to reach the issue of when the existence of factual

[*160] questions would require a jury. n32 Finding indications but no clear answer to the question in the old English cases it discussed, the Court considered the policy implications of leaving claim interpretation issues to a jury as opposed to reserving them for the judge. n33 First, the Court found persuasive the argument that judges, by virtue of their training, are typically better at construing written instruments than juries, dismissing as rare at best the occasions where the outcome would hinge on the assessment of the credibility of an expert. n34 Second, the Court stressed the value of consistency and uniformity of patent construction, which it believed would be "ill served by submitting issues of document construction to juries." n35

D. The Markman decisions as a guide for the practitioner.

The only clear teaching from the Markman decisions is that, for better or for worse, the interpretation of patent claims is going to be a job for the district court in the first instance and for the Federal Circuit in the second. n36 How the district judge is to go about the job of interpreting patent claims is not discussed in the Supreme Court opinion; however, the Supreme Court's refusal to take the path of characterizing claims interpretation as purely an issue of law suggests that the trial court can hear testimony as in the case of any other mixed question of law and fact. The Federal Circuit majority opinion, which continues in force except as altered by the Supreme Court, also suggests that the trial court may go beyond the pure "public record" of the claims themselves, i.e., the specification and the file history, to hear expert testimony and testimony by the inventor(s).

It may even be suggested that the Markman opinions should be read as requiring the district court to interpret prior art patents as well as the claims of the patent in suit. This issue has yet to be discussed in a district court or Federal Circuit decision, but it would appear to be one

[*161] that should be disposed of quickly. First, neither Markman appellate decision makes the slightest mention of the role of judge or jury in interpreting anything except the claims of the patent in suit. There is a fundamental difference between prior art patents and the patent in suit. The interpretation of prior art patents arises typically in the context of deciding whether what they disclose in fact anticipates or renders obvious the claims of the later patent in suit. n37 Prior art patent claims are typically unimportant to the analysis since it is the specification which claims are anticipated. n38 In the Markman situation, we look to the meaning of words and phrases within the claims of the patent in suit to define the scope of the invention, whereas with prior art patents, we look to the specification's description to see if it discloses the same invention. n39

In addition, the examiner is generally more attentive to the exact language of the claims than to that of the specification, so that the prosecution history of prior art patents will typically provide less guidance in understanding the disclosure. Finally, until or unless the Supreme Court decides that claim anticipation or obviousness are no longer to be decided by juries, it is unlikely that the interpretation of prior art patents will be assigned to the trial judge.

However, even without expanding their requirements to other patents or other technical documents, the Markman decisions offer little guidance to the trial court on how to go about the interpretation of patent claims. More specifically, the decisions appear to leave unanswered the following questions:

1. When should the Court provide its interpretation?

The choices appear to range from very early in the proceedings to after the entire trial. From the standpoint of the litigants, earlier is generally better, assuming that enough time is allowed for discovery about interpretation issues. The advantage arises from the fact that many patent cases turn on claim interpretation issues: if the plaintiff's interpretation is accepted, infringement isn't seriously contested; if the defendant's interpretation is accepted, often there is frequently either no infringement or anticipation by prior art becomes easy to prove. Thus,

[*162] early claim interpretation may lead to resolution or disposition of many cases earlier in time and at far less expense to the litigants. Discovery into a myriad of other validity defenses and the preparation of "alternative: case, depending on which interpretation is adopted, can be deferred and perhaps avoided altogether.

On the other hand, where significant liability questions remain after claim interpretation, the net effect of stopping to interpret the claims early on may be delay of the trial and, therefore, the resolution of the case. It is possible that by the time the litigants are in a position to assess whether or not an early claims interpretation decision will speed things up, it will be too late to affect the situation. Finally, it may be that the most informed claims interpretation decision would be after the judge has in fact heard all the evidence and understands not only what the parties assert as to the meaning of the claims, but also how those meanings affect the entire case. In particular, the judge's understanding of the history of the invention and the entire spectrum of prior art will likely be more restricted at an earlier interpretation hearing, both because the parties will limit the evidence they present in this area, and because discovery will not yet have fully developed these subjects.

Overlaying the timing question are the procedural complications of preliminary injunction hearings, summary judgment motions and the availability (or lack thereof) of early appellate review of the trial court's patent claim interpretations.

2. What evidence can the Court hear and rely on in reaching its interpretation?

The Federal Circuit Markman decision suggests a fairly wide latitude of permissible evidence, including the inventor himself and expert witnesses such as patent lawyers. n40 Subsequent decisions by the Federal Circuit, most notably in Vitronics Corp. v. Conceptronic, Inc., n41 suggest that too much latitude invites reversible error.

Obviously the claims themselves, the specification and the prosecution history will be considered. It is the so-called "extrinsic" evidence - evidence that would not necessarily be available to the competitor who reads the patent with an eye toward developing a non-infringing alternative - that raises the most questions. Particular questions come up concerning the following, presented in increasing order of controversy:

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- * Technical dictionaries or texts offered to define technical terms in dispute;
- * Prior art patents offered as evidence of the meaning of technical terms in dispute;
- * Expert testimony offered to provide an understanding of the art in general;
- * Expert testimony as to the meaning of technical terms in dispute;
- * Inventor's testimony as to what he or she intended the terms in dispute to mean;
- * Patent lawyer's testimony as the meaning of non-technical terms in dispute.

The Federal Circuit's Markman decision suggests that expert testimony which helps the court understand the technological context for the claims will be permitted and even welcomed by the district judges. n42 Technical dictionaries or texts are safe, unless the specification actually contains a definition of a term. Beyond that, the court may hear evidence, but the likelihood of reversal increases the more the judge relies on that evidence in reaching a decision. As will be seen in the discussion of the cases below, the district courts have primarily used expert or inventor testimony directed specifically at claim meanings as a source of admissions supporting an interpretation adverse to the party offering the evidence.

II. POST-MARKMAN DECISIONS - WHAT THE COURTS HAVE DONE SO FAR

A. Timing of the interpretation

Basing any generalizations on the cases decided after the Federal Circuit's Markman decision is risky because in some instances the timing of the appellate decisions themselves has affected the timing of the lower courts' claim interpretations. In a surprisingly large number of cases, claim interpretations were based entirely on a written record in a summary judgment context, and the decisions are vague as to when in the case the motion was made.

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1. Cases where a separate hearing occurred.

Alpex Computer Corp. v. Nintendo Co. Ltd. n43 The district court held an evidentiary hearing with the assistance of a special master to interpret the term "means for generating a video signal" in the context of microprocessor-based home video game system. The Federal Circuit opinion does not specify when the hearing occurred, but it appears that the trial of the remaining issues followed fairly shortly thereafter.

Chad Industries, Inc. v. Automation Tooling Systems, Inc. n44 The court held an evidentiary hearing, specifically finding that the separation of the claims construction proceedings from the jury trial would be more efficient because of the substantial impact of the claims construction on the evidence at trial. The "trial" for claims interpretation, which occurred pursuant to stipulation, consisted of an evidentiary hearing, supplemental briefing and oral argument before the judge. Strict rules of evidence were not applied, and the particular matters presented at the hearing are discussed in more detail below. n45 The hearing occurred two years after the case was filed, although some delay resulted from various transfers among the judges.

Elf Atochem North America, Inc. v. Libbey-Owens-Ford Co., Inc. n46 This case was one of the first cases to address the claim interpretation issue after the Federal Circuit's *Markman* decision. Claim interpretation was raised in the context of motions for partial summary judgment on a patent relating to glass production. The judge was about to deny all motions to allow the jury to decide the claim interpretation issues when the Federal Circuit issued *Markman*. Instead, he held a two-day bench trial, following which he entered an order incorporating his claim construction. n47 He chose this route from what he termed "three options" available in light of the "obligation" to instruct the jury on the meaning of the words used by an inventor in a claim:

The court can attempt to resolve these disputes on the paper record. Second the court can hold a trial to resolve the disputes. Finally, the court can wait

[*165] until trial and attempt to resolve claim disputes the evening before the jury must be instructed. n48 What the judge considered in reaching his decision construing the claims will be discussed below. n49

Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp. n50 The Federal Circuit's Markman decision came down on the eve of trial of this case involving a patent on surgical staples. The parties stipulated to a pretrial hearing as to the scope of the claims.

Genetech, Inc. v. Novo Nordisk A/S. n51 The setting for this case was a preliminary injunction motion decided after evidentiary hearings early in the case. A preliminary injunction issued against infringement of a patent on a method of producing a human growth hormone.

Graco Children's Products, Inc. v. Century Products Co., Inc. n52 The judge in Graco held an evidentiary hearing and ruled on claim construction issues a week before trial.

Lee's Aquarium & Pet Products, Inc. v. Python Pet Products, Inc. n53 This case, involving a patent on a device for cleaning fish aquariums, hinged on the definition of "gravel" as used in the patent claims. The case was decided on summary judgment after a "Markman hearing" held in conjunction with oral argument slightly under a year after filing of the complaint.

Loral Fairchild Corp. v. Victor Co. of Japan, Ltd. n54 In this case, involving an electronics patent, the judge held a two-day hearing on claim terms well in advance of trial. After having heard the court's ruling, however, the losing party changed its theory as to the meaning of some additional claims. The court then imposed sanctions precluding the defendant from changing its theory. n55 The court included some discussion of its view of the appropriate procedure for claims interpretation:

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The meaning of claim terms is the central issue of patent litigation. With most aspects of trial hinging on this determination - "strictly a question of law for the court," [citation to Markman omitted] - a conscientious court will generally endeavor to make this ruling before trial. A trial court faced with conflicting views of technical terms may prudently enlist the aid of qualified experts to determine the meaning of the claims terms. As in this case, this proceeding to assist the court in ascertaining the law is likely to occur after discovery in which the parties have exchanged information relevant to their understanding of the claims. n56

Moll v. Northern Telecom, Inc. n57 In response to a summary judgment motion filed by the defendant, the court considered eight proposed claim interpretations. The court accepted six on the papers and held an evidentiary hearing "to obtain the assistance of technical expert witnesses..." before accepting the remaining two. Once Northern Telecom's claim interpretations were accepted, summary judgment of non-infringement was granted. n58 It is unclear how long before the trial the hearing occurred.

P.A.T., Co. v. Ultrak, Inc. n59 A Markman hearing was held prior to consideration by the court of motions for summary judgment. The court interpreted the claims but held that summary judgment was precluded by questions of fact relating to anticipation and obviousness. n60

Thorn EMI North America, Inc. v. Intel Corp. n61 In reaching his second decision in this case, the judge held an evidentiary hearing and ruled on claims interpretation less than twenty-four hours before trial. After the judge orally announced his interpretation, the defendant moved for summary judgment of non-infringement and the jury was dismissed pending resolution of that motion. The judge ultimately allowed the case, which involved transistors in integrated circuits, to go to trial under the doctrine of equivalents. n62

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2. Cases where the court interpreted the claims during or immediately following trial

CVI/Beta Ventures, Inc. v. Tura LP. n63 This case involved the interpretation of claims of a patent relating to eyeglass frames and their ability to return to their original shape after stress. The district court apparently decided the claim interpretation issues in the context of determining how to instruct the jury following the evidence submitted at trial, and did not hold a separate hearing. Interestingly, the magistrate gave no limiting instruction on the term but merely instructed the jury to read the claim language according to its ordinary meaning to those reasonably skilled in the art. n64

Dow Corning Wright Corp. v. Osteonics Corp. n65 This case, involving an apparatus for placing artificial knees, had been tried to a jury before the Supreme Court's *Markman* decision and was on remand when the defendant moved for summary judgment. The district court interpreted the claims in the summary judgment context but had the benefit of the evidence it had seen at the earlier trial.

Eastman Kodak Co. v. Goodyear Tire & Rubber Co. n66 Procedurally, this case is somewhat unusual, in that the *Markman* decision came down during the trial itself. Accordingly, the court interpreted the patent based on the trial testimony and instructed the jury as to the meaning of the claim terms. The claims related to a process for making the hard plastic used in soft drink bottles, and the court construed a requirement that the material be crystallized to a particular density at a particular temperature range. The issue was whether the temperature range referred to the temperature of the heating medium or of the granulate itself.

Johns Hopkins University v. Cellpro. n67 The court interpreted the claims in the context of a motion for a new trial following a jury verdict. The judge had attempted to construe the claim after the evidence had been presented to the jury. n68 However, in the post-trial motions, the patentee convinced him that his earlier construction had been erroneous.

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Vitronics Corp. v. Conceptronic, Inc. n69 The district judge construed the patent claims in the context of deciding on jury instructions, after all of the testimony in the case had been taken. It may be that an earlier determination might have avoided the error seized upon by the Federal Circuit in reversing. n70

York Products, Inc. v. Central Tractor Farm & Family Center. n71 In this case, involving a patent for a protective vehicle cargo bed liner, the trial judge heard all of the trial testimony before construing the patent claims in the form of jury instructions.

3. Cases where no evidentiary hearing was held

ADC Telecommunications, Inc. v. Siecor Corp. n72 Claim construction issues were presented to the court in the context of summary judgment in this case involving fiber optic management and storage components. The motion was argued roughly a year after filing, following completion of discovery.

Allied Gator, Inc. v. NPK Construction Equipment, Inc. n73 This case, involving a patent on construction shears, was decided on partial summary judgment. The opinion does not reveal at what point in the proceedings the motion was brought.

American Bank Note Holgraphics, Inc. v. Upper Deck Co. n74 Here the court interpreted claims of a patent relating to hologram embossing in the context of the defendant's summary judgment motions asserting invalidity for failure to disclose the best mode and for lack of an enabling disclosure. The court took the opportunity to interpret one of the claims favorably toward the patentee, all but inviting a summary judgment motion that the patent was enabling. The timing of the summary judgment motion is unclear.

American Permahedge, Inc. v. Barcana, Inc. n75 Summary judgment of noninfringement was granted and affirmed in this case

[*169] involving an artificial hedge. The district court decided the motion some four years after the case was filed. n76

Calmac Mfg. Corp. v. Dunham-Bush, Inc. n77 Summary judgment was granted on motion by the alleged infringer in this case involving a patent for a thermal stage device. n78 The motion was filed eight months after commencement of the action.

CCPI, Inc. v. American Premier, Inc. n79 The court interpreted several terms in this patent (relation to an impact pad used to absorb the force of molten metal in steel production) after briefing and oral argument devoted to the issue. Based on the discussion, it is apparent that the hearing was in the nature of a summary judgment motion.

Ekchian v. Home Dpot, Inc. n80 The Federal Circuit engaged in a de novo review of the trial court's summary judgment in this case involving variable capacitance displacement sensors for use in devices to measure degrees of tilt.

General Mills, Inc. v. Hunt-Wesson, Inc. n81 This case, involving the question of whether popcorn is considered a "food item capable of having its color changed or being crispened by thermal energy" was decided on summary judgment. The patent was on food packaging intended to promote color change and/or crispening of foods in a microwave oven.

GMI Holdings, Inc. v. Stanley Door Systems, Inc. n82 The defendant succeeded in obtaining a summary judgment of noninfringement without any evidentiary hearing in this case involving screw drive garage door openers. n83 The motion was brought after two years of discovery and nearly another two years of procedural maneuvering.

Johansson v. rose Displays Ltd. Inc. n84 Cross motions for summary judgment were decided against the holder of a patent on a clothing data marker without evidentiary hearing. n85

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Lockwood v. American Airlines, Inc. n86 The Federal Circuit reviewed the grant of summary judgment in this case involving a computerized system of tailoring sales presentations to travel agents' customers. The motion was decided slightly less than two years after the action was filed.

R2 Medical Systems, Inc. v. Katecho, Inc. n87 The Court performed its claims analysis on various patents relating to heart monitoring and resuscitation devices in the summary judgment setting on a paper record.

Thorn EMI North America, Inc. v. Intel Corp. n88 In this, the first of two opinions in this matter, the court decided the claims interpretation issues on summary judgment without an evidentiary hearing.

Trilogy Communications, Inc. v. Times Fiber Communications, Inc. n89 This was another summary judgment case affirmed by the Federal Circuit, this time involving patents on coaxial cables.

Ultradent Products v. Life-Like Cosmetics, Inc. n90 In this case involving a patent on dental bleaching products, claim interpretation was decided on summary judgment. The district court ruled on the motion approximately fifteen months after the case was filed.

B. Evidence considered in interpreting claims

1. Cases where no "extrinsic" evidence was considered

DC Telecommunications, Inc. v. Siecor Corp. n91 The judge decided the claim interpretation issue on the basis of the claim language alone. The specification and prosecution history were before the court, as was an exhibit produced by the plaintiff that the defendant contended supported the defendant's interpretation. The court commented that under Vitronics, n92 it would be improper to resort to extrinsic evidence because the meaning of the claim itself was clear from the claim language.

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Alpex Computer Corp. v. Nintendo Co. Ltd. n93 The lower court conducted an evidentiary hearing before a special master; the appellate court held the special master's interpretation erroneous based on a failure to consider the prosecution history relating to claims not asserted against the alleged infringer. n94 The key point was that the distinction of a prior art patent was relevant to claim construction even though the patent was distinguished in the context of different claims from those asserted against the defendant. The Federal Circuit did not refer to any extrinsic evidence in the claim construction discussion; it is unclear what additional evidence, if any, was heard by the lower court at the evidentiary hearing.

American Bank Note Holographics, Inc. v. Upper Deck Co. n95 The portion of the court's opinion relating to claim construction refers only to the claims and the specification. The court specifically commented that the defendant's proffered interpretation was unsupported by any expert or other extrinsic evidence. n96

American Permahedge, Inc. v. Barcana, Inc. n97 The only extrinsic evidence mentioned in the appellate court's analysis was a dictionary definition of the word "lateral." Based on the prosecution history and the dictionary definition, the appellate court held that the meaning of the term "lateral" should not have been limited to "perpendicular" to the axis of the artificial branch of the artificial hedge. n98 However, the appellate court agreed with the lower court's interpretation on "planar array" (again based on the specification and prosecution history), which proved dispositive on noninfringement. n99

Calmac Mfg. Corp. v. Dunham-Bush, Inc. n100 The court referred only to the claims, the specification, and the prosecution history. It is unclear whether either party submitted extrinsic evidence in support of its interpretation of the claim at issue.

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Ekchian v. Home Depot, Inc. n101 The court referred only to the specification, prosecution history and the claim language itself in deciding that the phrase "conductive liquid-like medium" was not limited to the degree of conductivity of the materials listed as examples in the preferred embodiment. n102

En Liung Huang v. Auto Shade, Inc. n103 The opinion related entirely to what issues would and would not be decided based on a Markman hearing. The court decided it would not determine issues relating to file wrapper estoppel, n104 intervening rights, n105, the doctrine of equivalents n106 or the reverse doctrine of equivalents n107 in the context of the Markman hearing

Engel Industries, Inc. v. Lockformer Co. n108 this was a bench trial, but those portions of the opinion relating to patent interpretation only discuss "intrinsic" evidence. There is one reference to the inventor's testimony that he was "surprised" to learn that the patent didn't claim as much as he thought it did, but the court found that "his subjective intent is of little or no probative weight in determining the scope of the claims, except as documented in the prosecution history." n109

Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp. n110 Even though the opinion refers to a five day Markman hearing, the Federal Circuit's claim interpretation cites exclusively to the patent, the specification and the prosecution history.

Genentech, Inc. v. Novo Nordisk. n111 The court refers to a transcript of testimony, but the specific references in the portion related to claim interpretation are all to the specification and the prosecution history. n112 The only exception is a reference to testimony as the

[*173] definition of "introns" and the existence of methods to determine whether genomic DNA sequences contained them. n113

General Mills, Inc. v. Hunt-Wesson, Inc. n114 The record before the court consisted of the claims and a number of affidavits relating to how popcorn is cooked (and how it changes in the process). Both the trial and appellate courts apparently accepted the affidavits as scientifically accurate, and utilized them in determining the infringement issues. Claim interpretation was based entirely on intrinsic evidence (the claim themselves, the specification and the prosecution history). Based on that record, the appellate court concluded that popcorn was not a "food item energy," n115 and that Orville Reddenbacher microwave popcorn did not infringe General Mills' patent. n116

GMI Holdings, Inc. v. Stanley Door Systems, Inc. n117 The court construed the patent in light of the prosecution history in the context of a summary judgment motion on non-infringement.

J. T. Eaton & Co. v. Atlantic Pste & Glue Co. n118 This case literally dealt with an effort to build a better mousetrap. The bench trial was principally concerned with the appropriate test to determine whether or not the adhesive that trapped the luckless rodents would remain stable and not melt away at 120 degrees Fahrenheit. The evidence consisted of (1) the specification, which detailed at least two tests for this characteristic, both with the adhesive in the horizontal position; (2) the extensive prosecution history, which featured at least two other tests performed in the course of a reexamination, involving positions of the adhesive in vertical positions; and (3) extensive expert testimony, with at least one more (different) test. The appellate court (over a strong dissent) concluded, primarily on the prosecution history, that the claim limitation could only be established through testing the adhesive in a claims as establishable based on horizontal adhesive testing was erroneous as a matter of law. n119 The expert testimony on the meaning of the claims was disregarded on appeal.

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Lockwood v. American Airlines, Inc. n120 In this case involving a computerized system of tailoring sales presentations to travel agents' customer, the Federal Circuit had little trouble interpreting the claims favorably toward the defendant based on the specification and prosecution history alone. The interpretation disputes centered around terms like "self-contained," "audio-visual" and "customer," and the plaintiff advanced definitions which were simply not credible (arguing, for example, that "audio-visual" meant either audio presentations or visual presentations but not both) or were contradicted by positions taken during patent prosecution.

Minco, Inc. v. Combustion Engineering. n121 The Federal Circuit opinion affirming the trial court's claim interpretation (bench trial) referred only to the specification and the claim language. n122

P.A.T., Co. v. Ultrak. n123 The court specifically limited its analysis to the claims, specification and prosecution history. The court referred to the permissibility of consulting dictionaries and technical treatises to understand the underlying technology or find the ordinary meanings of particular terms, and cited to one dictionary for the definition of the word "vault." n124 It appears that neither side offered any other extrinsic evidence.

Phillips Electronics North America Corp. v. Universal Electronics Inc. n125 This case, involving a patent on a universal remote control, was tried to the court rather than to a jury. accordingly, the court's interpretation of the claims followed presentation of all of the evidence. However, in its discussion of the meaning of the claims, the court did not refer to any evidence other than the patent specification and prosecution history.

R2 Medical Systems, Inc. v. Katecho, Inc. n126 In this summary judgment case, the court made no reference to any expert declarations in its discussion of the meaning of the claims. The court consulted a dictionary for the meaning of the term "affixed," and adopted the

[*175] definition it found there in the absence of evidence from the parties of a contrary technical definition of the term. n127

Trilogy Communications, Inc. v. Times Fiber Communications, Inc. n128 In this case involving patents on coaxial cables, both the lower court and the Federal Circuit interpreted the phrase "fusion-bonded" based on dictionary definitions and the specification. The plaintiff offered an expert report containing opinions supporting its interpretation of the phrase, but the trial court excluded it from evidence (as untimely, primarily). The Federal Circuit affirmed this as well, noting that the expert report was superfluous in as much as the proper interpretation of the key term was arrived at through the intrinsic evidence plus the dictionary. n129

Ultradent Products, Inc. v. Life-Like Cosmetics, Inc. n130 In deciding summary judgment, the court based its interpretation entirely on the claim language, the specification and on technical dictionaries. On one issue, both sides submitted expert reports which appeared consistent with the technical dictionary cited by the court; the court rejected the patentee's proposed interpretation of the term "carboxypolymethylene" which appeared broader than the definition supplied by its own expert. n131

York Products, Inc. v. Central Tractor Farm & Family Center. n132 The Federal Circuit opinion makes no reference to extrinsic evidence in its review of the trial court's claim interpretation.

2. Cases where "extrinsic" evidence was considered

a) Expert testimony

Allied Gator, Inc. v. NPK Construction Equipment, Inc. n133 In construing the claims for this patent on construction shears in the

[*176] summary judgment setting, the court considered and agreed with opinions contained in the declaration of an expert witness for the plaintiff. n134 However, the opinions related to what was disclosed in prior art that was cited to the examiner during the prosecution of the patent. Moreover, the court based its analysis primarily on the claims themselves, the specification and the prosecution history.

Baxter Diagnostics, Inc. v. AVL Scientific Corp. n135 Patent claim interpretation in this case occurred in the course of a bench trial. The patentee asserted that the term "indication substance" had an uncommon meaning as used in the claim relating to blood testing equipment; however the court observed that no such definition was contained in the specification. The court also noted that testimony by "the [patentee's] attorney amounted to no more than a legal opinion," and was therefore entitled to no deference. n136 At least three experts testified to the common meaning in the art, and the court noted that the testimony was consistent with a technical dictionary. Experts also testified as the meaning of the word "color" in one of the claims.

Chad Industries, Inc. v. Automation Tooling Systems, Inc. n137 This case contains a detailed account of what was submitted and considered during the separate hearing on claim interpretation. Experts testified both about the technical background of the invention and the meaning of the disputed terms. A declaration by the inventor was accepted as indicative of what those skilled in the art would understand from reading the claims. n138 In addition, the court allowed the testimony of a patent law expert. However, the court made it very clear that it was treating this testimony as an extension of the argument of counsel, and not as evidence in the case. n139 The opinion generally is careful to base its claim interpretation conclusions on the specification, the prosecution history and the claims themselves.

CVI/Beta Ventures, Inc. v. Tura LP. n140 Apparently the magistrate considered expert testimony in the course of its claim interpretation, although there is no indication that it formed the bases for the magistrate's

[*177] decision. The Federal Circuit concluded that the magistrate's interpretation of the term "elasticity" (in the context of a patent on eyeglass frames) was incorrect, based on the claim language, the specification and the prosecution history. n141 Resort to the expert testimony was considered unnecessary. The patentee's efforts to distinguish prior art patents by extolling its eyeglass frames' ability to return to their original shape were especially persuasive to the court in rejecting the patentee's more expansive definition offered in the infringement setting.

Dow Corning Wright Corp. v. Osteonics, Corp. n142 This case's unusual procedural context may make it less than reliable as precedent. The case had been decided for the plaintiff by a jury which had interpreted the claims prior to the Supreme Court's Markman decision and had been remanded to the district court in light of that. The defendant then brought a successful summary judgment motion based on its interpretation of the claims. The district judge based his decision primarily on the claim language and specification. However, on several occasions the court referred to the earlier trial testimony of the inventor as supporting the defendant's position on the meaning of the disputed term. n143

Eastman Kodak Co. v. Goodyear Tire & Rubber Co. n144 This case poses the counterpoint to the Vitronics case (discussed below), in that the court carefully went through the claim language, the specification and prosecution history and still found uncertainty as to the meaning of the claim language in question. The appellate court approved of the district court's consideration of expert testimony under these circumstances, noting that "the testimony of one skilled in the art about the meaning of claim terms at the time of the invention will almost always qualify as relevant evidence," unless, of course, the meaning of the claim is clear from the specification and prosecution history. n145 Moreover, the court noted that "the trial court is best situated to gauge the relevance and need for additional evidence to explicate claim terms." n146

The Federal Circuit reviewed the claims, the specification and the prosecution history, concluded that the meaning of the terms at issue was uncertain, and then reviewed the trial record as well. The trial court's

[*178] assessment of the relative persuasiveness of the experts was affirmed as an appropriate basis for decision where the "intrinsic evidence" was not sufficiently clear to reach a conclusion. n147

Elf Atochem North America, Inc. v. Libbey-Owens-Ford Co. n148 The court heard expert testimony from both sides on the meaning of the claim terms to those skilled in the art. The opinion is replete with references to that testimony, but is also careful to support its conclusions with reasoning from the specification, the prosecution history and the claim language.

Graco Children's Products, Inc. v. Century Products Co, Inc. n149 In conducting its Markman hearing, the court heard testimony from both legal and technical experts. The opinion does not spell out what evidence (intrinsic or extrinsic) was persuasive in reaching its conclusion.

Johansson v. Rose Displays Ltd. Inc. n150 Plaintiff submitted an expert declaration in support of its summary judgment position on claim interpretation. The court, however, explicitly rejected the expert's evidence as contradicting the language of the patent. n151 There was no indication that the term at issue ("deformation") had any special meaning in the art of clothing design.

John Hopkins University v. Cellpro. n152 The judge afforded considerable weight to the testimony of one of plaintiff's experts in changing his mind about the meaning of a claim term in the context of a motion for a new trial. However, the court was also careful to tie its revised construction to the specification and prosecution history. at one point, the court seized upon some testimony by the defendant's expert as supporting the plaintiff's proposed interpretation of the phrase "substantially free" n153

Lee's Aquarium & Pet Products, Inc. v. Python Pet Products, Inc. n154 This case, involving a patent on a device for cleaning fish aquariums, hinged on the definition of "gravel" as used in the patent claims. The plaintiff contended that the term encompassed sand. The defendant disagreed. The court dutifully reviewed the claims and the specification, noting that the word "gravel" was used some 204 times, but

[*179] never defined. Similarly, no particular significance was attached to the term at any time during the prosecution history. Therefore, the court turned to extrinsic evidence in the form of dictionary definitions and declarations of experts, including the inventor. What carried the day for the defendant was a book published by the American Society of Testing Materials which contained definitions of "sand" and "gravel," respectively, characterized in terms of what size of sieve the particles of the substance would pass through.

Loral Fairchild Corp. v. Victor Co. Japan, Ltd. n155 The court considered expert testimony offered by the parties.

Moll v. Northern Telecom, Inc. n156 The plaintiff-inventor testified as an expert, and the defendant also offered expert testimony. The principal use made by the court of the inventor's testimony was as a source of admissions which established to the court's satisfaction that there was in fact no real dispute as to the meaning of the claim. n157

Thorn EMI North America, Inc. v. Intel Corp. n158 In granting the defendant's motion for partial summary judgment, the court construed a portion of the claims of the plaintiff's patent in accordance with the *Markman* decision. n159 The court cited several times to the defendant's expert opinions, which it viewed as consistent with the claim language. The issue was whether the method claims at issue required a step in the particular point in the process. The primary basis for the court's conclusion was a detailed examination of the prosecution history. n160 Immediately prior to trial, the court held a hearing to construe the remaining disputed claims. Upon hearing the court's claim construction, the defendant moved for summary judgment with respect to the remaining allegations of patent infringement. n161 In rendering its opinion, the court considered expert reports from both sides, although there was no specific finding that the claim language was ambiguous.

Vitronics Corp. v. Conceptoronic, Inc. n162 in this, the first post-*Markman* Federal Circuit opinion specifically to address what the court

[*180] should and should not consider in construing claims, the court appeared to severely restrict the range of evidence available to the trial judge for claim interpretation. The court stressed the importance of publicly available information - the claim language itself, the patent specification and, if in evidence, the prosecution history - as the primary tools to employ in patent interpretation. n163 where these tools are sufficient, the Vitronics court advised the trial court to go no further:

In those cases where the public record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. The claims, specification, and file history, rather than extrinsic evidence, constitute the public record of the patentee's claim, a record on which the public is entitled to rely.... Allowing the public record to be altered or changed by extrinsic evidence introduced at trial, such as expert testimony, would make this right meaningless. n164

Examination of the holding in Vitronics reveals that the fault of the district court was less in hearing the extrinsic evidence than in accepting it where, in the Federal Circuit's view, it contradicted or altered what was in the patent itself. n165 At issue was the definition of the phrase "solder reflow temperature" in the context of a method for soldering surface mounted devices onto printed circuit boards. The trial court had admitted into evidence not only the specification, but also expert testimony, testimony of the plaintiff's chief engineer (apparently a "fact witness / expert"), a paper written by a former Vitronics employee and a supposed admission from an earlier legal memorandum submitted by Vitronics. The trial court construed the claim without indicating which evidence it was relying on.

The Federal Circuit was quite explicit in holding that the inventor's subjective intent as to claim scope, if not expressed in the specification, was irrelevant. n166 It also endorsed the use of prior art as an aid in understanding how a disputed term is used by those skilled in the art, even preferring that source to expert testimony on the same issue. n167 The court was careful to distinguish expert testimony introduced to help the court understand the underlying technology from testimony as to the proper construction of the claims:

But testimony on the technology is far different from other expert testimony, whether it be of an attorney, a technical expert, or the inventor, on the proper

[*181] construction of a disputed claim term, relied on by the district court in this case. The latter kind of testimony may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe disputed claim terms. Even in those rare instances, prior art documents and dictionaries, although to a lesser extent, are more objective and reliable guides... Indeed, opinion testimony on claim construction should be treated with utmost caution, for it is no better than opinion testimony on the meaning of statutory terms. n168

Even though the trial court did not state that it had relied on the extrinsic evidence, the appellate court concluded that it must have done so because the meaning of the claim term was evident from the specification notwithstanding the party admission supporting the defendant's contrary interpretation. n169

Weatherchem Corp. v. J.L. Clark, Inc. n170 This case was a bench trial involving a patent on a spice container cap. The court's interpretation was primarily based on the specification, the prosecution history and on a general dictionary. The court rejected testimony by the plaintiff's patent attorney in the course of reaching its decision. n171

b) Inventor testimony

CCPI, Inc. v. American Premier, Inc. n172 The patent in this case related to an impact ring intended to absorb the force of the flow of molten metal in steel production. As to the first term at issue ("annular"), the court refers to standard dictionary definitions several times, but the only other reference to extrinsic evidence is to a statement by the inventor. The court recognized that this was extrinsic evidence but carefully noted that "given the disposition of this issue, however, the nature of the evidence is trivial." n173

The more interesting aspect of the case relates to the second passage of the claims under discussion: "said stream [of molten metal] is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream...." n174 The parties agreed as to the ordinary meaning of the language, but the

[*182] defendant submitted a videotaped demonstration and cross-examination of the inventor in an effort to show that the language at issue simply didn't make sense. Basically, the exhibit and testimony were intended to show that no one, not even the inventor, could tell which direction the molten metal was flowing at any particular time. The court opined that this was an effort to use extrinsic evidence to create an ambiguity where none otherwise existed, holding that the entire issue here was really aimed at the validity of the patent, not at the meaning of the claims. n175

c) Prior art

One of the "cannons" of claim construction is that if one of competing interpretations would render a claim invalid in light of prior art, the interpretation that would retain the validity of the patent is favored. Moreover, other patents contemporaneous with the patent in suit may present instances of the terms in dispute being used by those reasonably skilled in the art, even where the patents are too recent to be considered prior art. On these theories, litigants in the following cases have sought to introduce evidence of prior art materials in the context of claim interpretation.

Chad Industries, Inc. v. Automation Tooling Systems, Inc. n176 The opinion mentioned that the expert witnesses' testimony included some contrasting of the invention of the patent with the prior art. In dicta, the court observed "that it should not consider prior art that was not part of the prosecution history except as evidence of how those skilled in the art would interpret the claims," and then only if the claims could not be interpreted solely by reference to the specification and prosecution history. n177

Elf Atochem North America, Inc. v. Libbey-Owens-Ford Co. n178 The court specifically declined to consider prior art in the context of claim interpretation on the theory that it would interfere with the plaintiff's right to a jury trial on the issue of anticipation. n179 in this instance there was a disagreement between the parties as to the teaching of the prior art patent at issue.

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Johns Hopkins University v. Cellpro. n180 Prior art that had been cited to the examiner was considered by the same judge that rejected prior art in Elf Atochem. n181

R2 Medical Systems, Inc. v. Katecho, Inc. n182 The defendant sought to introduce prior art patents as an aid to interpreting the claims of the patent in suit. The court declined to rely on the prior art in light of its conclusion that the meaning of the term in question was clear from the specification and prosecution history. n183

III. ANALYSIS AND RECOMMENDATIONS FOR HANDLING VARIOUS KINDS OF MARKMAN ISSUES.

The cases discussed above evidence a wide range of options for the trial court, allowing a correspondingly wide latitude of options for the trial lawyer in formulating a strategy for obtaining the most favorable patent interpretation possible. While it is always risky to generalize, and every case has its own unique set of factors to consider, the following strategies are suggested by the cases:

Notwithstanding the language of Vitronics, in any technically complex case, you will want to call an expert to educate the judge on the underlying technology. It is difficult to imagine trial judge that would not welcome such an undertaking, provided that it is presented efficiently. This would suggest pressing for a hearing as opposed to merely trying to win on the papers.

In the absence of a hearing, consider submitting a videotaped declaration by an expert, possibly incorporating some demonstrative evidence aimed at teaching the fundamentals of the science involved in the patent. remember that for lay people, which includes most federal judges, technological density can be daunting indeed, and something in the nature of a tutorial may be absolutely essential for a clear understanding of your position.

Conversely, if the patent is not overly technical and you believe that the language of the claim itself should carry its normal English meaning, the winning strategy is probably to convince the court to interpret the claims on the paper record. There is a world of difference

[*184] between a patent on recombinant DNA processes and a patent on spice container caps or construction shears.

Even if your expert testifies about what the claim terminology means to those skilled in the art, Vitronics teaches us that it is dangerous to suggest that the court rely on your expert's testimony in construing the claims. The briefing should always urge that your proposed interpretation flows as night from day from the specification and the prosecution history. That your expert corroborates your interpretation is only natural, since you are so obviously correct.

It appears unnecessary and probably risky to call a "patent law expert" to testify on claim interpretation. If you feel compelled to do so, be sure to advise the judge that you would expect this testimony to be treated as an extension of counsel's argument. To do otherwise invites reversible error.

Unless you are using him or her to educate the judge on the general background of the invention, it is often best to keep the inventor off the stand. The case law is clear that the inventor's testimony is entitled to almost no defence if he or she testifies to what was meant in the application. However, when the inventor is made to agree with the other side, then the conclusion is that there is no dispute as to the terminology. Thus a testifying inventor amounts to a free shout for the opposition.

Some district courts, such as the Northern District of California, have initiated amendments to their local rules which would require a Markman hearing in every patent infringement case and which restructure the parties' discovery obligations in anticipation of that hearing. In light of Vitronics and the increasing number of cases indicating that reliance on extrinsic evidence is error unless absolutely necessary, these efforts may have been premature. In any event, the practitioner must be aware of special rules relating to claims interpretation which may be in force in the forum.

The ideal timing for a Markman hearing is probably shortly after the close of discovery, probably about sixty days before trial, which is about the time when the Court will be considering summary judgment motions. The parties have learned what they need to know about the case to fully understand and articulate their positions. The summary judgment motions will probably incorporate enough factual background to give the judge an understanding of the context of the claim interpretation issues. Assuming that the court is reasonably prompt about providing a ruling, the parties will know how the patent claims are going to be interpreted in time to prepare their trial presentations accordingly (or resolve the case).

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Again, where the technology is reasonably simple, and where the key issues revolve around claim interpretation, it may be in both parties' interest to push for an earlier resolution of these issues, rather than undergoing discovery on the entire range of issues which present themselves in most patent litigation.

Drafting jury instructions with your proposed claim interpretations will become much more of an art form after *Markman*. A useful strategy may be to include your proposed instructions with the briefing on claim interpretation and work from them in arguing the issues after the evidence is in.

Because the jury must now be instructed as to the interpretation of the claims, it may become more desirable to try the case based on representative claims, or with special verdict forms aimed at establishing whether individual elements common to more than one of the claims have been satisfied.

One may or may not agree with the proposition that the jury should be precluded from interpreting patent claims. These authors tend to agree that leaving this task to the court reduces the uncertainties and risks of litigating patent cases before juries. It is now certain that judges will be interpreting patent claims, and the job of the litigator will be to ensure that those interpretations are informed and accurate.

[SEE TABLE IN ORIGINAL]

n1 *116 S.Ct. 1384, 38 U.S.P.Q.2d (BNA) 1461 (1996).*

n2 *Markman's original patent was No. 4,550,246. The patent in controversy was his reissue patent, U.S. Reissue Patent No. 33,045.*

n3 *As a practical matter, a discrepancy in tracked invoice amount would indicate that something had happened to an article of clothing, leading to the same result most of the time.*

n4 *Markman v. Westview Instruments, Inc., 52 F.3d 967, 34 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1995).*

n5 *Id. at 975, 34 U.S.P.Q.2d (BNA) at 1325.*

n6 *Id. at 975, 34 U.S.P.Q.2d (BNA) at 1325-6.*

n7 *Markman, 116 S.Ct. at 1387, 38 U.S.P.Q.2d (BNA) at 1463.*

n8 *Markman, 52 F.3d at 977, 34 U.S.P.Q.2d (BNA) at 1327.*

n9 *McGill, Inc. v. John Zink Co., 736 F.2d 666, 221 U.S.P.Q. 944 (Fed. Cir. 1984)*

n10 *Markman, 52 F.3d at 977, 34 U.S.P.Q.2d (BNA) at 1328.*

n11 *Id. at 979, 34 U.S.P.Q.2d (BNA) at 1329.*

n12 *Id. at 987, 34 U.S.P.Q.2d (BNA) at 1336.*

n13 *Id. at 979, 34 U.S.P.Q.2d (BNA) at 1329.*

n14 *Id. at 981, 34 U.S.P.Q.2d (BNA) at 1331.*

n15 *Id.* at 979, 34 *U.S.P.Q.2d* (BNA) at 1329.

n16 *Id.* at 980, 34 *U.S.P.Q.2d* (BNA) at 1330.

n17 *Id.* at 981, 34 *U.S.P.Q.2d* (BNA) at 1331.

n18 *Id.* at 982-3, 34 *U.S.P.Q.2d* (BNA) at 1331-2.

n19 *Id.* at 983, 34 *U.S.P.Q.2d* (BNA) at 1332-3.

n20 *Id.* at 989, 34 *U.S.P.Q.2d* (BNA) at 1337.

n21 *id.*

n22 *Id.* at 992-3, 34 *U.S.P.Q.2d* (BNA) at 1340-1.

n23 *Id.* at 993, 34 *U.S.P.Q. 2d* (BNA) at 1341.

n24 *Id.* at 998-99, 34 *U.S.P.Q. 2d* (BNA) at 1345-46.

n25 *Id.* at 1026, 34 *U.S.P.Q.2d* (BNA) at 1368.

n26 *Id.* at 1000-02, 34 *U.S.P.Q.2d* (BNA) at 1347-48.

n27 *Id.* at 1002-8, 34 *U.S.P.Q.2d* (BNA) at 1348-54.

n28 *Markman v. Westview Instruments, Inc.*, 116 *S. Ct.* 1384, 38 *U.S.P.Q.2d* (BNA) 1461 (1996)

n29 *Id.* at 1387, 38 *U.S.P.Q.2d* (BNA) at 1463.

n30 Since this article is aimed at the teachings of the Markman decisions from the viewpoint of the patent litigator attempting to navigate his or her case to resolution, it will concentrate on those aspects of the decision which may guide - or distract - the practitioner in pursuit of this goal, rather than on the intricacies of constitutional analysis of the right to a jury trial.

n31 *Id.* at 1389-92, 38 *U.S.P.Q.2d* (BNA) at 1464-67.

n32 *Id.* at 1392-93, *U.S.P.Q.2d* (BNA) at 1468.

n33 *Id.* at 1395, 38 *U.S.P.Q.2d* (BNA) at 1470.

n34 *Id.*

n35 *Id.* at 1396, 38 *U.S.P.Q.2d* (BNA) at 1471.

n36 The courts have resisted invitations by litigants to extend the Markman reasoning to other patent litigation issues. In *Huang v. Auto-Shade, Inc.*, 945 *F. Supp.* 1307, 1308-10, 41 *U.S.P.Q.2d* (BNA) 1053, 1055-58 (*C.D. Cal.* 1996), for example, Judge Kelleher held that issues of file wrapper estoppel, intervening rights and the reverse doctrine of equivalents could not be addressed in a Markman hearing, but were either jury issues or issues for the court to decide on a full evidentiary record.

n37 1 DONALD S. CHISUM, PATENTS § 3.06 (1995)

n38 *Id.*

n39 5 DONALD S. CHISUM, PATENTS § 18.03 (1995)

n40 *Markman*, 52 *F.3d* at 980, 34 *U.S.P.Q.2d* (BNA) at 1330.

n41 90 *F.3d* 1576, 1585, 39 *U.S.P.Q.2d* (BNA) 1573, 1579 (*Fed. Cir.* 1996).

n42 *Markman*, 52 *F.3d* at 981, 34 *U.S.P.Q.2d* (BNA) at 1331.

n43 1994 *WL* 681752, 34 *U.S.P.Q.2d* (BNA) 1167 (S.D.N.Y.), *aff'd* in part, *rev'd* in part, 102 *F.3d* 1214, 40 *U.S.P.Q.2d* (BNA) 1667 (*Fed. Cir.* 1996), *cert. denied*, 117 *S.Ct.* 2480 (1997).

n44 938 *F. Supp.* 601 (*C.D. Cal.* 1996).

n45 See *infra* p. 22.

n46 894 *F. Supp.* 844, 37 *U.S.P.Q.2d* (BNA) 1065 (*D. Del.* 1995).

n47 *Id.* at 850, 37 *U.S.P.Q.2d* (BNA) at 1069.

n48 *Id.*

n49 See *infra* p. 24.

n50 900 *F. Supp.* 172., 38 *U.S.P.Q.2d* 1385 (*S.D. Ohio* 1995), *aff'd* in part, *vacated* in part, *remanded*, 93 *F.3d* 1572, 40 *U.S.P.Q.2d* (BNA) 1019 (*Fed. Cir.* 1996).

n51 935 *F. Supp.* 260 (*S.D.N.Y.* 1996), *vacated*, 108 *F.3d* 1361, 42 *U.S.P.Q.2d* (BNA) 1001 (*Fed. Cir.* 1997), *reh'g denied*, (1997), *petition for cert. filed*, 66 *USLW* 3170 (NO. 97-337) (Aug. 11, 1997).

n52 1996 *WL* 617429 (*E.D. Pa.* 1996).

n53 951 *F. Supp.* 1469 (*S.D. Cal.* 1997).

n54 906 *F. Supp.* 798 (*E.D.N.Y.* 1995).

n55 *Loral Fairchild Corp. v. Victor Co. of Japan, Ltd.*, 911 *F. Supp.* 76 (*E.D.N.Y.* 1996) (*ruling on motion for discovery sanction*).

n56 *Id.* at 79.

n59 948 *F. Supp.* 1506 (*D. Kan.* 1996).

n60 *Id.* at 1517.

n61 936 *F. Supp.* 1186 (*D. Del.* 1996).

n62 *Id.* at 1201.

n63 905 *F. Supp.* 1171 (*E.D.N.Y.* 1995), *rev'd* in part, *vacated* in part, *reh'g denied*, 112 *F.3d* 1146, 42 *U.S.P.Q.2d* (BNA) 1577 (*Fed. Cir.* 1997).

n64 *Id.* at 1150, 42 *U.S.P.Q.2d* (BNA) at 1580.

n65 939 *F. Supp.* 65 (*D. Mass.* 1996).

n66 114 *F.3d* 1547, 42 *U.S.P.Q.2d* (BNA) 1737 (*Fed. Cir.* 1997).

n67 931 *F. Supp.* 303 (*D. Del.* 1996), *motion to vacate denied*, 99 *F.3d* 1159 (*Fed. Cir.* 1996).

n68 *Johns Hopkins University v. CellPro*, 894 *F. Supp.* 819 (*D. Del.* 1995) (*order for jury instructions*).

n69 *Civil Action No. C-91-696-L*, 1995 WL 154897 (D.N.H. 1995), rev'd and remanded, 90 F.3d 1567, 39 U.S.P.Q.2d (BNA) 1573 (Fed. Cir. 1996).

n70 *Id.* at 1584-5, 39 U.S.P.Q.2d (BNA) at 157809.

n71 99 F.3d 1568, 40 U.S.P.Q.2d (BNA) 1619 (Fed. Cir. 1996)

n72 954 F. Supp. 820 (D. Del. 1997).

n73 937 F. Supp. 694 (N.D. Ohio 1996), appeal denied, 111 F.3d 142 (Fed. Cir. 1997).

n74 934 F. Supp. 630 (S.D.N.Y. 1996).

n76 901 F. Supp. at 157-8, 38 U.S.P.Q.2d at 1049 (S.D.N.Y. 1995).

n77 929 F. Supp. 951, 40 U.S.P.Q.2d (BNA) 1889 (E.D. Va. 1996).

n78 *Id.* at 966, 40 U.S.P.Q.2d (BNA) at 1900.

n79 966 F. Supp. 276 (D. Del. 1997).

n80 1995 WL 799588, 37 U.S.P.Q.2d 1477 (E.D. Va.), vacated, 104 F.3d 1299, 41 U.S.P.Q.2d (BNA) 1364 (Fed. Cir. 1997).

n81 917 F. Supp. 663, 41 U.S.P.Q.2d (BNA) 1420 (D. Minn. 1996), aff'd, 103 F.3d 978, 41 U.S.P.Q.2d (BNA) 1364 (Fed. Cir. 1997).

n82 943 F. Supp. 1420 (N.D. Ohio 1996).

n84 924 F. Supp. 328 (D. Mass. 1996), vacated, 121 F.3d 727 (Fed. Cir. 1997).

n85 *Id.* at 330.

n86 107 F.3d 1565, 41 U.S.P.Q.2d (BNA) 1961 (Fed. Cir. 1997), aff'g 877 F. Supp. 500, 34 U.S.P.Q.2d (BNA) 1290 (S.D. Cal. 1994).

n87 931 F. Supp. 1397 (N.D. Ill. 1996).

n88 928 F. Supp. 449 (D. Del. 1996).

n89 109 F.3d 739, 42 U.S.P.Q.2d (BNA) 1129 (Fed. Cir. 1997), aff'g No. J91-0542(W)(S) (S.D. Miss. 1995).

n90 924 F. Supp. 1101, 39 U.S.P.Q.2d (BNA) 1969 (D. Utah 1996), aff'd in part, rev'd in part, - F.3d-, 1997 WL 625070 (Fed. Cir. 1997).

n92 See *infra* p. 25 and notes 163-170.

n93 102 F.3d 1214, 40 U.S.P.Q.2d (BNA) 1667 (Fed. Cir. 1996), aff'g in part, rev'g in part 1994 WL 681752, 34 U.S.P.Q.2d (BNA) 1167 (S.D.N.Y. 1994).

n95 934 F. Supp. 630 (S.D.N.Y. 1996).

n96 *Id.* at 633.

n97 105 F.3d 1441, 41 U.S.P.Q.2d (BNA) 1614 (Fed. Cir. 1997) aff'g 901 F. Supp. 155, 38 U.S.P.Q.2d (BNA) 1048 (S.D.N.Y. 1995).

n98 *Id.* at 1444, 41 U.S.P.Q.2d (BNA) at 1616.

n99 *Id. at 1443, 41 U.S.P.Q.2d (BNA) at 1616.*

n100 *929 F. Supp. 951, 40 U.S.P.Q.2d (BNA) 1889 (E.D. Va. 1996).*

n101 *104 f.3d 1299, 41 U.S.P.Q.2d (BNA) 1364 (Fed. Cir. 1997), vacating 1995 WL 799588, 37 U.S.P.Q.2d (BNA) 1477 (E.D. Va. 1995).*

n102 *Id. at 1303, 41 U.S.P.Q.2d (BNA) at 1368.*

n103 *945 F. Supp. 1307, 41 U.S.P.Q.2d (BNA) 1053 (C.D. Cal. 1996).*

n104 *Id. at 1309, U.S.P.Q.2d (BNA) at 1056.*

n105 *Id.*

n106 *Id. at 1311, U.S.P.Q.2d (BNA) at 1057-58.*

n107 *Id. at 1310-11, U.S.P.Q.2d (BNA) at 1056-57.*

n108 *96 F.3d 1398, 40 U.S.P.Q.2d (BNA) 1161 (Fed. Cir. 1996).*

n109 *Id. at 1405, 40 U.S.P.Q.2d (BNA) at 1165.*

n110 *93 F.3d 1572, 40 U.S.P.Q.2d (BNA) 1019 (Fed. Cir. 1996), aff'g in part, rev'g in part 900 F. Supp. 172, 38 U.S.P.Q.2d (BNA) 1385 (S.D. Ohio 1995).*

n111 *935 F. Supp. 260 (S.D.N.Y 1996), vacated, 108 F.3d 1261, 42 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1997)*

n112 *Id. at 266-68*

n113 *Id. at 267*

n114 *103 F.3d 978, 41 U.S.P.Q.2d (BNA) 1440 (Fed. Cir. 1997), aff'g 917 F. Supp. 663, 41 U.S.P.Q.2d (BNA) 1420 (D. Minn. 1996).*

n115 *Id. at 979, 41 U.S.P.Q.2d (BNA) at 1441.*

n116 *Id. at 980, 41 U.S.P.Q.2d (BNA) at 1442.*

n117 *943 F. Supp. 1420 (N.D. Ohio 1996).*

n118 *106 F.3d 1563, 41 U.S.P.Q.2d (BNA) 1641 (Fed. Cir. 1997).*

n119 *Id. at 1569, 41 U.S.P.Q.2d (BNA) at 1646.*

n120 *107 F.3d 1565, 41 U.S.P.Q.2d (BNA) 1961 (Fed. Cir. 1997), aff'g 834 F. Supp. 1246, 28 U.S.P.Q.2d (BNA) 1114 (S.D. Cal. 1993).*

n121 *95 F.3d 1109, 40 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996), aff'g 903 F. Supp. 1204 (E.D. Tenn. 1995).*

n122 *Id. at 1114, 40 U.S.P.Q.2d (BNA) at 1005.*

n123 *948 F. Supp. 1506 (D. Kan. 1996).*

n124 *Id. at 1513.*

n125 *930 F. Supp. 986 (D. Del. 1996).*

n126 *931 F. Supp. 1397 (N.D. Ill. 1996).*

n127 *Id. at 1425.*

n128 109 *F.3d 739*, 42 *U.S.P.Q.2d (BNA) 1129 (Fed. Cir. 1997)*, aff'g 1995 WL 918082 (*S.D. Miss. 1995*).

n129 *Id. at 744*, 42 *U.S.P.Q.2d (BNA) at 1133.*

n130 924 *F. Supp. 1101*, 39 *U.S.P.Q.2d (BNA) 1969 (D. Utah 1996)*, aff'd in part, rev'd in part, 1997 WL 625070 (*Fed. Cir. 1997*).

n131 *Id. at 1109*, 39 *U.S.P.Q.2d (BNA) at 1975.*

n132 99 *F.3d 1568*, 40 *U.S.P.Q.2d (BNA) 1619 (Fed. Cir. 1996).*

n133 937 *F. Supp. 649 (N.D. Ohio 1996)*, appeal denied, 111 *F.3d 142 (Fed. Cir. 1997).*

n134 *Id. at 698.*

n135 924 *F. Supp. 994 (C.D.Cal. 1996)*, modified, 954 *F. Supp. 199*, 43 *U.S.P.Q.2d (BNA) 1224 (C.D.Cal. 1996).*

n136 *Id. at 1012.*

n137 938 *F. Supp. 601 (C.D.Cal. 1996)*

n138 *Id. at 609.*

n139 *Id.*

n140 112 *F.3d 1146*, 42 *U.S.P.Q.2d (BNA) 1577 (Fed. Cir. 1997)*, rev'g in part, vacating in part 905 *F. Supp. 1171 (E.D.N.Y. 1995).*

n141 *Id. at 1162*, 42 *U.S.P.Q.2d (BNA) at 1588.*

n142 939 *F. Supp. 65 (D. Mass. 1996).*

n143 See, e.g., *Id. at 70.*

n144 114 *F.3d 1547*, 42 *U.S.P.Q.2d (BNA) 1737 (Fed. Cir. 1997).*

n145 *Id. at 1555.* 42 *U.S.P.Q.2d (BNA) at 1742.*

n146 *Id.* (citing *International Communication Materials, Inc. v. Ricoh Co.*, 108 *F.3d 316*, 318-19, 41 *U.S.P.Q.2d (BNA) 1957*, 1958 (*Fed. Cir. 1997*) ("allowing the trial judge 'to complete the picture' by developing a 'more complete record'")).

n147 *Id. at 1560*, 42 *U.S.P.Q.2d (BNA) at 1746.*

n148 894 *F. Supp. 844*, 37 *U.S.P.Q.2d (BNA) 1065 (D. Del. 1995).*

n149 106 *F.3d 423 (E.D. Pa. 1996).*

n150 924 *F. Supp. 328 (D. Mass. 1996)*, vacated, 121 *F.3d 727 (fed. Cir. 1997).*

n151 *Id. at 330.*

n152 931 *F. Supp. 303 (D. Del. 1996).*

n153 *Id. at 312-319.*

n154 951 *F. Supp. 1469 (S.D. Cal. 1997).*

n155 906 *F. Supp.* 798 (*E.D.N.Y.* 1996).

n156 1996 WL 11355 (*E.D. Pa.* 1996), *aff'd*, 119 *F.3d* 17 (*Fed. Cir.* 1997).

n157 *Moll*, 1996 WL 11355, at *7.

n158 928 *F. Supp.* 449 (*d. Del.* 1996).

n159 See *supra* p. 1 and note 1.

n160 *Thorn EMI*, 928 *F. Supp.* at 465.

n161 *Thorn EMI North America, Inc. v. Intel Corp.*, 936 *F. Supp.* 1186, 1188 (*D. Del.* 1996).

n162 90 *F.3d* 1576, 39 *U.S.P.Q.2d* (BNA) 1573 (*Fed. Cir.* 1996).

n163 *Id.* at 1582-83, 39 *U.S.P.Q.2d* (BNA) at 1577.

n164 *Id.* at 1583, 39 *U.S.P.Q.2d* (BNA) at 1577.

n165 *Id.* at 1585, 39 *U.S.P.Q.2d* (BNA) at 1579.

n166 *Id.* at 1584, 39 *U.S.P.Q.2d* (BNA) at 1578.

n167 *Id.*

n168 *Id.* at 158, 39 *U.S.P.Q.2d* (BNA) at 1579 (emphasis in the original).

n169 *Id.* at 1584, 39 *U.S.P.Q.2d* (BNA) at 1579.

n170 937 *F. Supp.* 1262 (*N.D. Ohio* 1996)

n171 *Id.* at 1282.

n172 966 *F. Supp.* 1262 (*D. Del.* 1997).

n173 *Id.* at 279 n.5.

n174 *Id.* at 281 n.9.

n175 *Id.* at 283.

n176 938 *F. Supp.* 601 (*C.D. Cal.* 1996).

n177 *Id.* at 610 n.7.

n178 894 *F. Supp.* 844, 37 *U.S.P.Q.2d* (BNA) 1065 (*D. Del.* 1995).

n179 *Id.* at 860, 37 *U.S.P.Q.2d* (BNA) at 1077.

n180 931 *F. Supp.* 303, 315-316 (*D. Del.* 1996).

n181 See *supra* p. 28 and notes 179-180.

n182 931 *F. Supp.* 1397 (*N.D. Ill.* 1996)

n183 *Id.* at 1428.