SEARCHING – THE ART BEHIND AN OPINION

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1) Introduction

Searching is an area of the patent practice that doesn't generally get a lot of attention in educational seminars. On the other hand, the search is the foundation for a significant segment of the opinions that we do. Certainly it is the foundation for any clearance or validity type opinion. Without good art, an invalidity opinion is typically pretty tough to write. Without a good search, a clearance or patentability opinion probably doesn't mean much.

Many (and probably most) of the things that are important to keep in mind when coordinating a search are basically common sense, particularly in hindsight. At the same time, in my experience, motivating and coordinating comprehensive searching is probably the area of the practice that patent attorneys as a group are worst at. With that as my premise, hopefully we'll find that a review of some of the issues that arise around searching can be useful.

2) Types of Searches

a) State of the Art

i) The searcher's assignment in a State of the Art search is to gather all of the art that they can find (or representative samples) in a particular (hopefully narrowly defined) technical area.

(1) Example: Farallon Medsystems – A local medical device startup that seeks to detect vulnerable plaque in vascular vessels (and particularly coronary arteries) by using a catheter that detects "hot spots" in the vessel walls.

(a) State of the Art Search Request: Find all patents/publications relating to devices for detecting vulnerable plaque in vascular vessels. Or, find all patents/publications relating to devices for thermally mapping a vessel in a human body.

b) Patentability (Novelty)

i) A Patentability search is typically conducted to determine whether a particular invention is likely patentable. The searcher's assignment is generally to find the art that is closest to the invention.

(1) The searcher typically tries to do a search similar in scope to the search an Examiner would conduct.

(2) The search results may be used to determine the likely patentability and/or scope of the invention.

(3) Example: Search the concept of a catheter having multiple thermal sensors (preferably arranged in rows and/or bands) suitable for detecting temperature variation in a body vessel (e.g., vascular vessels).

c) Validity

i) A validity search is typically conducted to find art that can invalidate some or all of the claims of a particular patent.

d) Clearance (Infringement/Freedom to Operate)

i) The goal of an infringement search is to determine whether a particular product or type of product would likely infringe an existing patent.

(1) General infringement searches look broadly at the patent literature

(2) Targeted clearance searches may focus on patents held by particular organizations (competitors, etc.).

3) Types of Searchers

a) Patent Searcher

i) U.S. Patent Search Firms are typically located in D.C.

ii) Similar organizations exist for searching European and Japanese patents and patent publications

b) Professional Literature Searchers

i) Electronic Literature Searching - may be accomplished using any of a number of available electronic databases.

ii) Library searching – there are a number of Journals & other publications (e.g. trade association proceedings) that are not available on-line. Sometimes these publications can best be accessed by "manual" library based searching.

(1) Locally Stanford and UC Berkeley have phenomenal technical libraries.

(2) The Library of Congress (in D.C.) has an incredible collection of publications.

c) Internet Based Searching

d) Specialty Firms that have Extensive Databases

e) Grass Roots Searching (i.e., Bounty Quest)

f) Retaining an Expert in the Field (Old Timer Search)

i) Industry Veteran

ii) University Professor (If the early work was likely academic)

4) Patentability Searches

a) When do we do a Patentability Search

i) Independent Inventors – Searching is often prudent before undertaking the relatively large costs associated with preparing and filing an application

ii) Startup Companies - Patentability Searching may be a step in the Due Diligence Process

(1) Investors (e.g., VC or VC's attorneys) will often ask whether a "search" was done

(2) Typically the VC's are looking at both patentability and clearance issues

iii) Corporate – Patentability Searching may be an integral part of the Invention Disclosure Filtering Process

iv) Attorney/Agent – A practitioner preparing an application may find it helpful to conduct a pre-drafting search

(1) To help define the appropriate scope of the application

(2) To briefly familiarize oneself with an unknown technology

b) Who does the search

i) Typically done by Patent Search Firm

(1) Most Patent Search Firms look primarily at the patent literature

ii) Some organizations have in-house searching capabilities

iii) Sometimes done by the attorney who will be preparing an application

c) Typical Searcher Costs

i) $300 - $1000

d) Caveats

i) Patentability Searches are ALWAYS limited in scope and thus they are far from foolproof

ii) Gulf in expectations between attorney and client

(1) Independent Inventors & small companies that are relatively new to the patent process in particular tend to think that they are paying a huge amount for the search and thus expect perfection

(2) Attorneys requesting the search tend to view a patentability search as a quick and dirty effort to help facilitate a business decision as to whether to file.

iii) Communicate Limitations

iv) The search may uncover prior art patents that are infringement risks.

5) Validity Searching – Be creative

a) When do we do a Validity Search

i) When there are concerns about potential infringement risks for an existing or proposed product

ii) When there is a desire to produce a product in a space related to a particular patent

b) Check to see if the patent is still in force

c) Who does the search

i) Any and/or all of the described searchers

ii) In many cases, there will be technical experts within the company (client) who are knowledgeable about the prior art. It is usually worthwhile to have at least one technical person within the company (client) do some parallel searching and/or identification of prior art.

d) Typical Search Costs

i) $2000 - $$$$

ii) The costs of validity searching tend to be a function of the difficulty in finding suitable prior art.

iii) Generally validity searching is a staged process. The depth of the search will typically depend on the economics of the business decision surrounding the investigation.

iv) If the motivation for the investigation is litigation (or potential litigation) where the stakes are high and invalidity will need to be one of the primary arguments, plan to conduct extensive searching.

e) Caveats

i) Validity searching in particular can be a difficult and time consuming task.

ii) When the art uncovered is something other than a printed publication (e.g., a public use, a sale, prior invention, public knowledge, etc.), make sure you fully document the art.

(1) It is far too common for engineers to swear that a patented invention is "just like" the prior art and then not be able to locate or document the prior art they are thinking of (imagining?).

iii) Don't forget the dependent claims.

6) Formulating a Validity Searching Strategy

a) Where is the best prior art most likely to be found?

i) In some technologies, the best collection of prior art is likely to be the patent literature.

(1) e.g., compressors for automotive air conditioners.

(2) e.g., electrostatic printing

ii) If much of the research, design or development in a particular field is done overseas, it might be particularly useful to conduct parallel searches in Japan or Europe.

(1) For example, in fields like semiconductor processing, automotive components, semiconductor memory, etc. Japanese companies are very strong

(2) Some of the large Japanese electronics and automotive companies file 10,000 or more Japanese patent applications every YEAR.

(3) In fields like pharmaceuticals, medical devices or nuclear power – Europe is typically a better source of prior art

iii) In some technologies the published literature is likely to be the best collection of prior art

(1) Pharmaceutical compounds

(a) New uses of an old pharmaceutical

(2) Encryption and modulation algorithms

iv) In technical fields where products were traditionally not patented, the old timer search is often the most effective approach

(1) Software is one good example

(2) Networking & Computer technologies

(a) Example I, Sun & Apple pre 1990 patent portfolios

(b) Example II, Cisco pre 1995 patent portfolio

b) Patent Searching may be a simple way to start at moderate costs but this tends to be limited in focus.

c) Traditional Literature Searching – has the advantage of focusing on different areas than the Examiner likely looked at and can also be a good way to start.

d) For the difficult cases, non-traditional searching can have far better results.

i) In a high percentage of the industries here in Silicon Valley, the old timer search is one of the best approaches to identifying art in a difficult case

(1) Software/Computers

(2) Electronics/Telecommunications/Networking

(3) Medical Devices

(4) Internet technologies

ii) Chip Libraries – there are a small group of companies that specialize in reverse engineering semiconductor devices. These companies typically have a significant inventory of old chips (that are ready to be reverse engineered) and libraries of the chips that they have reverse engineered over the years.

(1) The bigger and better reverse engineering houses typically have the ability to do prior art searching within their own libraries.

(2) The reverse engineering houses are also very useful when trying to prove public use of a non-documented feature.

iii) Trade association proceedings

(1) Trade journals

(2) Technical presentations at trade conferences

(a) Example 1 – If the art relates to the detection or treatment of vulnerable plaque in coronary arteries, the annual vulnerable plaque conference sponsored by the AMA is a great source of potential prior art.

(3) Presentations at Standards Group meetings

(4) Many of these types of publications are not readily available on-line in an easily searchable form. However, some of the larger technical libraries may have copies.

e) Additional Steps –

i) Look at the art cited in relevant patents or publications

ii) Identify the patentee's own art (The patentee is sometimes its own worst enemy)

(1) Do a patent family search and make sure you have the art (and if appropriate file histories) of all parent, sister and child cases both domestically and internationally.

(a) It is not uncommon for foreign prosecution to turn up more relevant art than found by the U.S. Patent Office.

(b) It is also not uncommon for a sister or child case to cite more relevant art.

(2) Does the patentee and/or assignee have other patents or published papers in the field?

(a) How many patent prosecutors have not had the somewhat disconcerting experience of the U.S. or European patent office citing a relevant publication or patent that identifies one of the co-inventors as an author, despite repeated questions to the inventors about such art.

(3) Are there actual products based on the patented invention? If so, investigate when such products came out.

iii) Get on the phone and dig.

(1) Call the inventors/engineers who developed the closest art you are aware of. They may well have done more than is apparent from a particular patent or publication.

(2) Call others in the field to see if they are aware of art. Most people are more helpful than you might think.

iv) Are there others (e.g., suppliers, customers or competitors) in the field who might be able to assist in locating suitable art. If so consider contacting them.

(1) In some circumstances, a supplier or customer will likely have better access to the most pertinent art than you do.

(2) Example – Motor speed controller for Electric vehicles. Many patents exist relating to the control of electric vehicles. However, the manufacturers of the electric vehicles typically don't make the electric motor speed controllers and don't necessarily know a lot of details about motor speed controller technology.

(a) If a vehicle manufacturer is investigating a patent, it is very likely that the motor speed controller supplier will know about more prior art than the vehicle manufacturer does because the supplier produces speed controllers for a variety of other customers and applications.

(b) If the supplier is investigating a patent, they may have difficulty knowing, verifying and/or documenting that a controller was actually used in the claimed manner without getting the assistance of vehicle manufactures.

(3) Be aware that there may be business reasons for not contacting customers (e.g. not wanting to unnecessarily concern a customer).

v) Identify others with a common interest in invalidating the patent and consider contacting them with a view towards cooperating to identify and share the best art.

(1) Is the patent in question being asserted against an industry or a number of companies?

(2) In many circumstances competitors will have a common interest in invalidating a particular 3rd party patent.

(3) Do suppliers or customers have an interest in invalidating the patent?

f) As a group, conducting and motivating exhaustive searching is one of the areas of the practice that patent attorneys tend to be weakest at.

i) Know the abilities of your searcher.

(1) I have yet to meet the searcher who is capable of conducting a comprehensive search covering all of the available art.

ii) Be creative.

iii) Dig!

7) Clearance Searching

a) When do we do a Clearance Search

i) Most often, clearance searching is done prior to the introduction of a new product.

(1) Sometimes, a clearance search is done before beginning work on a new product or a new product area.

(a) An early clearance search provides an overview of the patent landscape and may help with analyzing the risks and likely costs of producing a product.

(b) Permits required design arounds to be integrated from the beginning of the product development cycle as opposed to being completely reactive.

(c) The patent literature can also be a source of good technical education in a particular field.

(i) I have several entrepreneurial clients who go straight to the patent literature to get up to speed on a technical field when they are contemplating entering a new business.

ii) Startup Companies - Clearance Searching can be an important step in the Due Diligence Process.

(1) Potential Investors at any stage in a start-up company's development will likely ask whether there are infringement issues and whether a search was done.

(a) It is always nice to be able to answer "yes" and to be able to explain that either:

(i) the art that the company is aware of is not a concern; or

(ii) that the business plan accounts for dealing with any patent issues.

(2) One relatively cost effective way to address this investor concern is to conduct a state of the art search in the area of interest.

(a) This tends to work in part because many technology based startup companies have a defined focus in a relatively new area of technology.

(i) e.g., thermal mapping of vascular vessels.

iii) Targeted clearance searches when introducing a competitive product

(1) If we know the competitor(s) who have products currently in the space, it may be advantageous to focus on the patent portfolios of those specific companies.

(2) In most instances, the biggest risks of infringement litigation come from competitors and/or parties that are known within the industry to have patents that they are asserting.

iv) In any clearance search, ASK THE CLIENT (key technical and business people) about:

(1) patents that they are aware of in the field; and

(2) their main competitors and/or individuals that are known to be active in the field.

(a) Example – Question to Farallon: How did you get the idea for the thermography catheter – Answer: I read an article by X suggesting that vulnerable plaque has a heat signature.

(i) Patents to X would probably be a great place to start looking.

(3) Then pay particular attention to the identified patents and/or patents held by the identified parties.

b) Who does the search

i) Pure general infringement searches are typically done by an experienced Patent Search Firm.

(1) Most of which are located in Washington D.C.

(2) Similar searches internationally are typically handled by foreign associates in the countries of interest.

ii) More targeted clearance searches may be conducted by patent attorneys themselves.

c) Framing the Clearance Search

i) In many circumstances, by nature, an infringement search will need to focus on a particular feature or set of features of a product or method. However, it is important for both the attorney and the searcher to try to think broadly about the types of activities that could potentially be infringing.

(1) Example I – A pharmaceutical compound

(a) There may be patents on the compound itself.

(b) There may be patents on the production of the compound.

(c) There may be patents on treatment programs using the pharmaceutical.

(d) There may be patents on intermediates (e.g. metabolites) that are created during the formation of the compound.

(e) There may be patents on metabolites that the body makes after ingesting the pharmaceutical compound.

(f) There may be patents on the genus of the compound which contains the species of the particular compound in theory, but which does not use the particular compound in an example.

(2) Example II – Farallon's thermography catheter

(a) There may be patents on interventional thermal sensing devices – (endoscopes, catheters, etc.)

(i) Some of these patents may be well outside of Farallon's target application of vascular vessels.

(b) There may be patents on inflatable balloon structures (which will be used in the production device to position the thermal sensors) or other components of the catheter

(c) There may be patents on catheter construction techniques

(d) There may be patents on the diagnosis of vulnerable plaque by detecting hot spots (temperature variation) within vascular vessels.

d) Limitations of clearance searching: It is critical to understand (and communicate) the inherent limitations of clearance searching.

i) There is always a risk of infringement (or assertions of infringement being made) regarding aspects of the product or method that are not the focus of the search.

(1) Example I: what clearance search for the business model of an internet company would have come up with the BT "hyperlinking" patent.

(2) Example II: is an infringement search regarding a new semiconductor chip architecture (e.g., a particular microprocessor or programmable logic architecture) likely to identify all semiconductor process patents that are potentially infringed by the fabrication of that chip.

ii) Even as to the feature(s) that are the target of the search, relevant patents may turn up in classes/subclasses not reviewed by the searcher.

iii) Relevant applications may be pending and unpublished and therefore not available to the searcher at the time of the search

iv) Claims of published applications may be broadened after publication

v) Being human, and given the complex nature of patent claims, it is entirely possible that the searcher may overlook a relevant patent that was squarely within the field of search.

(1) Example: Even if the search was specifically for hyperlinking – it is not clear that the BT patent would have been flagged by most infringement searchers.

(a) Why not: Because the immediate impression one would get based on relatively quickly reading the claims and looking at the figures would be that the patent is not particularly related to hyperlinking as we know it today.

vi) The integrity of the patent files that are publicly available for manual searching is not 100%.

(1) However, if requested, searchers will conduct an integrity check to verify that they have seen every patent in the searched classes/subclasses.

e) Clearance searching with published patent applications

i) Effective November 29, 2000, many newly filed applications will be published 18 months after the earliest claimed priority date (or as soon as practical thereafter).

(1) A number of applications have already been published and many more are in the queue for publication.

ii) Publication will lead to situations where the device in question comes within the scope of claims of the published application.

(1) When rendering a clearance opinion in these cases, we will need to consider the probability that the claims will issue in a form that covers the device in question.

(2) This may seem difficult at first, but in practice it is merely a patentability opinion for the concepts disclosed in the published applications.

(3) In some situations, it may become necessary to conduct follow-up patentability searches on particularly relevant published applications in order to provide appropriate clearance.

iii) Claims of published applications may be broadened after publication.

f) Caveats Typical Searcher Costs

i) $3000 - $10,000+ depending on nature of the request

ii) Clearance Searches are always limited in scope and thus they are far from foolproof.

iii) Gulf in expectations between attorney and client

(1) A client that has paid a significant amount for clearance searching but doesn't understand the inherent limitations is going to be very unhappy when they receive their first ding letter.

iv) Communicate limitations

(1) Make sure the client understands that clearance searches can never be exhaustive.

v) Disclaimers

vi) Make sure the search extends back far enough to consider a full 20 years of issued patents.

(1) Over the years, there have been a number of patents issued in less than a year.

8) State of the Art Searches

a) When do we do a State of the Art Searches

i) State of the Art searches are sometimes done early in the product development cycle to get a feel for areas that might be avoided during design and development.

ii) A state of the art search may be done in place of a patentability search in some situations.

(1) Often the State of the Art search will provide much of the same art as a patentability search, plus additional art.

(2) When the inventors have a lot of different ideas in a new technical area, a State of the Art search may be able to help focus the direction of the application.

iii) Startup Companies – As discussed above, it is very common for investors to ask whether a "search" was done.

(1) Typically investors are looking at both patentability and clearance issues.

(2) Pure Infringement or patentability searches often don't make sense early in the life cycle of a startup company in view of the costs and/or the fact that in many situations the designs are too preliminary to focus the search appropriately.

(3) Thus, a state of the art search tends to meet the searching needs of the startup company quite well.

iv) Investor Due Diligence – If searching is to be done as part of the Due Diligence process on company when deciding whether to invest, again, a state of the art search may be the most appropriate search when considering reasonable budgets and timeframes for conducting the search.

b) Who does the search

i) Typically done by Patent Search Firm

c) Typical Searcher Costs

i) $300 - $2000

d) Caveats

i) Remember, the searcher's assignment in a State of the Art search is to gather all of the art that they can find (or representative samples) in a particular technical area. Although a State of the Art search may be used in place of a patentability or infringement search in certain circumstances, be aware that it is not by any means an equivalent search.

ii) It is generally not useful to request a State of the Art search in an overly broad technical area.

(1) E.g., electrostatic printing. There are likely tens of thousands of electrostatic printing patents.

(2) Even in a relatively narrowly defined area, a State of the Art search can have the potentially undesirable effect of providing too many references.

9) Patent Search Firms

a) U.S. Patent Search Firms are typically located in D.C.

b) Similar organizations exist for searching European and Japanese patents and patent publication

10) Professional Literature Searchers

a) On-line searching – there are a number of technical databases that are available on-line.

i) In this talk I am not going to say much about traditional on-line literature searching and traditional patent searching since most attorneys are quite familiar with these avenues.

b) Library Searching

i) There are a number of publications that are not readily available on-line, but which may be available in certain libraries.

(1) Many trade journals

(2) Trade association proceedings

(3) Technical presentations at trade conferences

(4) Presentations at Standards Group meetings

(5) etc.

ii) Locally Stanford and UC Berkeley have phenomenal technical libraries.

iii) Unfortunately, there are not a lot of searchers around (that I am aware of) that are good at true library searching.

(1) Greg Aharonian is one local guy who is actually quite good at the Library based searching.

iv) Example - Exercise Equipment search – one of the best pieces of art found was an advertisement in a late 1800's Abercrombie & Fitch Catalog archived in the Library of Congress.

11) Internet Based Searching

12) Specialty Firms that have extensive internal databases

a) Semiconductor

i) Chip Libraries – By way of example, a couple good reverse engineering houses that have chip libraries and the abilities to search their libraries (as well as some other semiconductor art) include:

(1) Chipworks (www.chipworks.com)

(a) 3685 Richmond Road, Suite 500
Nepean, On K2H 5B7
Canada
Phone: + 1 613.829.0414
Fax: + 1 613.829.0515

(2) Semiconductor insights (www.semiconductor.com)

(a) 3000 Solandt Rd
Kanata, Ontario
Canada
K2K 2X2
Tel: 613.599.6500
Fax: 613.599.6501

13) Grass Roots Searching (i.e., Bounty Quest)

a) Bounty Quest (www.bountyquest.com) has had some success in uncovering hard to find art. But it appears to be hit and miss (and miss). However it can be a useful tool in the right circumstances.

14) Retaining an Expert in the Field

a) Simple in principle. The challenge is typically identifying the right "expert."

i) The best experts are generally people that have been involved in the industry for a long time (and thus have a historical view of the development of the industry) and who have extensive contacts within the industry.

(1) Some of the best art comes from simply calling around to friends/ professional acquaintances, explaining the situation and asking whether they are aware of any art.

(2) An intimate familiarity with the technology also gives the expert a far better idea of the best places to look for hard to find art than a conventional searcher is likely to have access to.

ii) If the technology is an area with an extensive academic history, a professor who works actively in the field can be a good starting point.

b) In many cases the more senior technical employees at the company will be able to identify an appropriate expert.

i) Independent contractors and/or semi-retired engineers/scientist often work well.

ii) Even if the identified "expert" is employed, it is not unusual to be able to get some "moonlighting" help.

15) Final thoughts:

a) If there are just two things that I can leave people with they would be:

i) Understand and communicate the inherent limitations of searching; and

ii) Be creative, resourceful & persistent when trying to track down art in the difficult validity searches.