A View of the Furniture Trade in 2020

Erik Groenhout
November 10, 2010

Defining the business

I am Erik Groenhout, a teacher at the Amsterdam campus of the Hout & Meublerings College, and also a lecturer at the Restoration and Conservation Master at the University of Amsterdam. In my 27 years at the HMC, I have set up courses in fine woodworking, boatbuilding, wooden frame building, furniture design, computer-aided design, CNC programming, applied geometry in the crafts, and during the school year 2010-2011 I am busy developing a degree program in Creative Craftsman ship. I was also a participant of the expert panel conference in Brussels. I have been asked to come here today, in order to share my vision of the future of the furniture manufacturing trade. I am honored to be here, but recognize the difficulty of predicting the future. It would be presumptuous of me to suggest that you take my view as the truth. Nevertheless, it is an interesting intellectual challenge. I hope you will take my view with a grain of salt.

Before I can take off into the future I have to clarify and define some domains that are part of my future image. The furniture trade is incredibly diverse and broad, and operates on a local and global scale both in mass production and in customization. Our trade is not very clearly defined, and, by extension, neither is the education that serves as the bridge between the furniture business and any person, young or old, who is looking for an interesting career in designing, making, and selling furniture.

Suppose we narrow the subject of the furniture trade to fine woodworking. If we do so, we will find on one side of the spectrum the solitary Artisan who makes custom and artistic (furniture) objects. On the other end of the spectrum we see global industries where groups of specialists work on large scale production, together as a team. Somewhere in the middle of the spectrum there are the solitary custom cabinet maker, the 20-man interior builder, or the 1-man industrial hockey stick maker who, with the help of a CNC router, makes large numbers of one product. In addition, we have the 4-man veneer team that creates custom marquetry with a laser cutter for big mega yacht wharfs, or the 6-man staircase maker who works with specialized CAD/CAM software and a 5 axis CNC router. 10 years ago it was only large factories that could afford high-tech machinery for the woodworking trade. In 2010, small businesses can also find affordable automated machines. This trend of high-tech small businesses will increase.

We don't have to worry too much about the bigger industries, let's say above 250-man personnel. These outfits are rare and represent only 0.4% of the market; furthermore, they can only survive through powerful logistics and good marketing. More than 97% of the companies in Europe are under 50-man personnel, and I would estimate that 80% of these companies are even under 20-man personnel. So we are mainly talking about small companies that create the majority of furniture in Europe. One thing is certain: the distinction between the big industrial production process and the small scale company production process is becoming less clear.

The furniture trade has changed considerably since World War II. Nowadays furniture is at least 50% made of materials other than wood like: metals, plastics, textiles, glass, natural stone, concrete and many others. Material technology has advanced very quickly during the last 15 years, and the list of new materials seems to expand exponentially. The fine furniture trade has become a ‘multimaterialworking’ trade; in essence it had become a mix of crafts. For this reason, we should make a clear distinction between the furniture maker who is actually a ‘multimaterialworker’ focused on the product, furniture, and the traditional furniture maker, who is a fine woodworker focused on the product: furniture. While the end product and the focus are the same, the skill set and materials are different.

©Erik Groenhout/ Amsterdam: e.groenhout@hmcollege.nl/ Erik_Groenhout@hotmail.com
Crafts and products often get mixed up. Furniture is a product, like a wooden frame building, a vase, a hat, a coat or a wooden shoe is a product. Woodworking, masonry, metalworking, plasticworking are crafts used to create these products. A craft concentrates on a material because it is the material that decides the possibilities for form, tools, construction, structure and type of finishing, etc. As long as a material remains unchanged, the craft doesn't change either. For example, wood gives us clear proof of this hypothesis. The proportions of constructional parts, the type and use of joints, and the basics of cutting technology have not changed since the Pharaohs reigned in Egypt.

The domino was already invented a couple of thousand years ago and used in Egyptian boxes and Roman ships, and they were called loose tenons. Festool, a global company that makes professional electrical hand tools, invented the domino router in 2006 and perfected the manufacture of loose tenons, which they started calling ‘dominos’. It is not the essence of the construction that has changed, it is only the tool that has been changed by Festool.

My definition of a craftsman is a skillful and knowledgeable man or woman who masters the whole process of making a product from the idea of the product to the presentation of the final version, and is able to make all the choices and use all the skills that are available NOW, in 2010. This means that the woodcraftsman is able to cut a row of dovetails with a handsaw and a chisel, but is also able to make plans in a CAD program and program a CNC machine.

I don't want to say that the craftsman has to do everything himself, but that he should be able to, so that he can oversee the process. A craftsman in a factory supervises the complete production process and needs social and management skills on top of his craft skills. Even if the industrial craftsman never touches a chisel himself anymore, he will be able to manage the entire process well if he is a true craftsman. The modern craftsman sits on a robot, has a chisel in one hand and a laptop in the other.

A product is not a craft and is not dependent on a material. A product is just a function of use; a hat is worn on your head, a chair is to sit on, and a bed is for resting. The craftsman has to master a material as well as the specifications of product utility. Therefore, I make a clear distinction between material skills and product knowledge. Some of you might think that product utility is in the domain of the designer, but how does the modern conceptual designer solve the material and construction related problems without the craftsman? Designers and craftsmen have to work together or, better yet, should be one and the same person to create high quality products.

The modern furniture business is a cooperation between several crafts, for example wood-craft, metal-craft, plastic-craft, and, of course the skill of organizing, and perhaps the art of selling.

All of this becomes even more complicated when we incorporate the stylistic aspects of furniture. A style is a set of distinctive and recognizable forms, structures, material choices, colors, etc. that make an object attractive during a certain historical time period or to a certain group of people.

©Erik Groenhout/ Amsterdam: e.groenhout@hmcollege.nl/ Erik_Groenhout@hotmail.com
Take, for example a chair, which is, in essence, only the two planks that support the human buttocks and the back. That means that all other parts in a chair are no more than construction to fight gravity and are a stylistic statement. If the supporting parts were only construction, there would be no reason whatsoever to keep making new models as long as the material doesn’t change. In this sense, the non-essential parts of furniture became the most important mechanical and stylistic creative playgrounds for all furniture creators. My conclusion is that the domains of ‘material’, ‘product utility’, and the ‘stylistic playground’ are the essence of the furniture business. Lastly, making products without selling them is a dead end, or hobbyism, which means that entrepreneurship should be considered as the fourth domain.

If I put my reasoning together, there are four domains we have to focus on in our struggle to push the European furniture trade successfully forward into the future: material working technique, stylistic and innovative creativity, product utility, and entrepreneurship.

The complete process from idea to final product often runs through the following stages: orientation, development, presentation and feedback, preparation, making, and selling. It seems that these stages are chronological in time, but in fact we are looking at a continuous process that is not linear, but intuitive and holistic. It is impossible to walk through this circle without looking forward and backwards and to the other side of the circle at the same time. For example, if you are in the stage of developing a product, you will be fed by the knowledge and experience you gained during the orientation stage. At the same time, you have to think about what is possible and impossible in the making process and, for example, how your marketing should be approached. This 6-stage circle is actually a simplification, and I think the truth is more complex. I explain these complexities in my book “The Amoeba of Object Creation” in which I use a comprehensive model to show how all aspects that are apparent in each and every 3-dimensional object from a potato to a chair work together. In the interest of time, today I limit myself to four domains (Material skills, Creative ability, Product knowledge, Entrepreneurship) and 6 stages in the process of making products (orientation, developing, presentation and feedback, preparation, making, selling). The way we deal with them should probably become more professional and holistic, and our vocational training programs should clearly incorporate these domains and stages.

Peak into the Future

Let’s take a jump into the unforeseeable future of ‘twenty twenty’, but not straight into the topic of furniture. First I would like to examine what is going on outside our small world of furniture, as there are much bigger uncertainties in this world that have to do with global developments.

Climate change is without doubt one of the big topics. Mankind is finally convinced that nature should no longer be used as a milk cow and a dump. Even though researchers don’t completely agree on the causes of climate change, their debate is not really important anymore. In the hearts of people, politicians, and in the spirit of business efficiency, energy consumption and CO2 emissions are already a future focus point for businesses. The question will be: are we quick enough to make the switch towards green solutions before the oil prices rise through the roof? In every scenario, the furniture trade will be affected, and has to do what it can to reduce energy consumption, forced either by oil prices or ethics.

The future supply of wood will be threatened from at least three sides: deforestation (not everybody is yet convinced that a living forest is worth more than a dead forest), forestation (forests that will not be cut but protected for their function as a CO2 filter), and the fast growth of the world population that has to share the decreasing amount of wood. There is also a fourth one that is no less threatening: desertification (land that becomes desert) as a result of the depletion of groundwater wells because of over pumping due to the increasing water demands of worldwide agriculture. I think the furniture trade needs to learn to increase production with considerably lower amounts
of materials; we have to find successful, rational, and innovative ways to use less material. Until now, only sporadic research has been done, and the research took place in the context of conservation and restoration, and very rarely in the field of new fine woodworking techniques and products. To do more with less material, we have to start seriously researching scantlings (measurements) that are now still mainly based on tradition, empirical grounds, or simply on trade sizes (1" or 2" planks).

The Italian Chiavari chairs show how thinly we can build chairs, but it is rarely done. For example the majority of drawers could split the thickness of their sides in half and still be perfectly functional. Making this one change could save whole forests.

Another solution could be completing the cycle like the Finnish company Artek, which has produced about 8 million Alvar Aalto stools since 1935, is now doing. They collect old chairs and create a 2nd cycle to raise the issue of conscious consumerism. If conscious consuming becomes a trend, and I truly believe it will, low quality mass production could very well come under stress in the coming 10 years.

To live and work more in harmony with the environment, I think we should embrace the philosophy of ‘cradle to cradle’ that takes the moment when the designed object becomes unwanted into consideration. The idea is that every part of a disassembled object will be fully incorporated into a biological or industrial cycle without creating any material waste or an unhealthy manufacturing process. It has been proven by small companies and corporate businesses that ‘cradle to cradle’ is profitable.

In some conceptual design, reuse of materials has already been done for some years in custom or semi-custom made products (for example by the Dutch designer Piet Hein Eek). In the bigger, industrialized processes, reuse is not practiced yet, but the amount of small companies setting up production based on reused materials is growing quickly. Furniture restoration is another solution to fight the expected decrease in materials; for this reason, I expect a revival of the furniture restaurateur. Specifically not necessarily the restaurateur and conserver of antiques, but rather the ones who are more occupied with repairing and redesigning furniture, whom I would call the ‘furniture remaker’.

It would be great if in the process of making new furniture, the process of ‘furniture remaking’ is anticipated by using truly reversible glues and constructions. For example, if I have a chair with a broken leg and I want to replace the leg, I have to take the whole chair apart. With current glues, true reversibility is impossible, and even with the old animal glues, it is a difficult job to take apart a piece of furniture. Therefore we should ask our friends the (bio)chemists to assist us by creating a truly reversible glue, for example, a Nano-glue that can be switched on and off like a magnet. Rethinking construction and production methods is necessary in order to make ‘furniture remaking’ possible as a common thing in the future.

Yet another way to use less material would be to advance techniques of splitting wood and save all the energy and wood that is now wasted in sawdust. As you know, splitting fibers cost much less energy and wear and tear on tools than the action of cutting fibers. Split wood is more durable, stronger and more visually attractive. In small studio workshops, the technique is well known, but on an industrial scale it is only apparent in the machining of veneer.

Wood trade sizes also create a lot of waste. The solution could be ‘board splitting on demand’, meaning that the lumber mill would custom split the sizes you order.

Planks can also be built up out of smaller parts to create stronger planks with less material, much like H-beams used in building practice. Combined with advanced CNC laser or water-cutting techniques, planks can be created that leave the mechanical neutral axis of the beam over to the air. These (high-tech) planks could be produced in factories or can be custom made. The challenge to use less materials will trigger a new visual style like the industrial production of ornament bands had a considerable
impact on Louis XVI furniture. These kinds of innovations demand true entrepreneurship and vocational training on a high level.

Exactly what the division of the world’s political and economic powers will look like in the coming decades is not at all clear yet. A lot will depend on the education level of populations, the creative and innovative power of countries, the decision-making speed and power of governments, and the ownership and distribution of natural resources. Outsourcing of production from Europe to the BIC countries (Brazil, India and China) has brought economic advantages on both sides. Nevertheless, it seems that big furniture manufacturers have started moving parts of their production back home. Long-distance production causes all kinds of logistic and communication problems. The disadvantages of outsourcing seem to no longer balance out the advantage of low wages; in addition the low wages will not stay low when the economy comes back. For big manufacturers, another reason to move back home is the demanding consumer market in Europe and other Western countries for which quicker reaction time is needed.

Even though we shouldn’t say it out loud, it would also be wise to doubt the assertion that growth in the economy will fully come back soon. After all why would it? There is a lot of unbalance in our world right now, and we don’t know yet how to deal with global communities. The more we become aware of the Earth as an entity that all people share, the more complex our lives become because we have to deal with all the climates, cultures, religions, politics and many, many different people. The inertia of the global situation is such that it can turn in every direction, so we should be prepared for surprises. In the name of economic growth, up-scaling companies and corporations seemed to be the most common solution, but I think we need to up-scale and modernize the smaller companies and down-scale big corporations at the same time.

I would like to take a glimpse into the laboratories and dungeons of science and innovation as my last exploration of world topics.

Biochemistry, for example, is actively working on treating wood to increase the mechanical and sustainability characteristics of wood.

Nano technology shows its applications in the world of furniture through high-tech paints, filters, and materials on which dirt is unable to stick, much like dirt doesn’t stick on the flower of the lotus that lives as an angel in the muddy swamps of India and never gets dirty. In the laboratory Nano technologists are creating very tiny and cheap sun panels, sensors, and information chips that can be inserted into the threads of a cloth. The chips that are made nowadays are printed on 2-D plates, but technicans are working on the introduction of the third dimension of the chip on a nano scale. It could very well be that the power of computers will increase more than a million times during the coming decades. History has proven that what is theoretically possible will, at a certain point in time, most likely happen, and often sooner rather than later.

The development of a handheld CNC router robot that moves around, steered by a local satellite system, would be the perfect instrument for interior builders because it would simplify work preparation considerably. Imagine just making a simple floor and then routing the slots for placing walls. There are endless possibilities. We have a task to create a European platform, a think tank, focused on innovations for the furniture trade.

Current business practices and state-of-the-art machinery and software that are on the market in 2010 are mostly technologies from the metal craft that are adjusted to the woodworking craft, like the example of the satellite router I just discussed. As furniture manufacturers we kind of look over the wall and take what we can use from our ‘metalworking-craft’ colleagues, which is not very creative nor innovative. To increase creative and innovative power, we should learn to stand on our own feet first. We have to start innovating at the level of material technology and forestry, construction and bonding methods, scantlings, logistics and marketing.

There are craft malls showing up on the Internet as well as in true malls, mostly in the United States of America. I see them as a kind of virtual factories, a kind of logistic masterpiece of many small, specialized companies that, together, are better equipped to quickly respond to special customer wishes and fashions. The entrepreneur(s) that
see the same potential in Europe will stand up soon, I am sure about that, and we need them sooner rather than later.

My vision focuses on European developments in the furniture trade. If I try to look at Europe from a global standpoint we are an old and rich culture with admirable technological development, which is, currently, still a melting pot of traditional and modern technologies. The danger is that we Europeans have the tendency to stick to tradition and miss the spontaneous innovative power that for example the Americans show. If we are able to combine a more spontaneous, and I would even prefer a childish, innovative power with the knowledge and experience of tradition, we would hold a very powerful first weapon in the global competition. Secondly, Europe is a continent where the people are generally critical about product aesthetics and technical quality. The many European buildings and objects that have survived for centuries and still surround every European are an ongoing reminder that quality pays off. I think aesthetic and technical quality is the second European weapon for global competition. Our political decision-making power (in comparison to the United States of America and China) is weak because we have to negotiate every step with all our allies, which is a drawback on the short term but could be an advantage on a global scale because we have learned to bridge differences with other cultures and to deal with other ways of looking at the world.

There is also a local aspect to all global issues so I would like to shift your attention to the importance of furniture companies on a local scale. The big world topics and the economic crises shifted most peoples’ focus towards their own region, which is one reason for the revival taking place in small and artistic crafts. If I add to this the fact that CAD design and CNC technology became accessible to smaller, non-industrial companies, my confidence in bigger and less flexible industrial plants quickly decreases. Big industries should make their production more flexible, while small companies (who are more flexible per definition) should be modernized. As a Dutchman, I have the tendency to think that the right focus should be somewhere between the two extremes that I just sketched. I think, in vocational training, we should think from the middle ground (20-man modern small scale company that is able to make custom work with the use of CAD/ CAM and CNC technology) and from there leave the doors open to train the traditional small craftsmen and the global industry cultivators/managers. Big manufacturers who are actually only looking for unskilled hands, machine operators, ICT personnel and managers should be aware of the fact that having too narrow of a professional skill is symptomatic of uninspired workers. Eventually all champion league soccer teams are relying on the large playing field of kids that begin with big dreams on small-town fields. Without these dreams, kids will never even reach close to the top, and it is often the same with machine operators and ICT personnel who are uninvolved in the larger focus of the industry in which they work. Learning to operate a machine out of the blue will not even start a spark in any youngster. Learning to operate machines, while incorporated into a much larger and interesting craft process, will create a breeding ground for motivated manufacturing personnel. Autonomy, complexity, and a reward proportional to the effort one puts in (within the borders of individual talent) is what makes people happy in their work, which is the key to motivation and productivity.

In the Netherlands we have the world’s largest ‘flower auction’ in the world. The auction is owned by a cooperation of flower cultivators and has the following functions: bringing together flower cultivators, an intermediary between the flower cultivators and the customers, and as a knowledge center. The flower auction is a great example of how working together can produce super results for everyone involved. Employers and employees in the furniture trades are organized in their own unions, but companies as a business entity hardly cooperate. Taking the flower auction as an example, I think it is time to take steps towards the creation of furniture cooperation’s and a logistic system that connects the majority of small companies, industries, innovative and creative laboratories, high-tech machine-park services, traditional craftsmen, IT technologists, biochemists, artists, vocational schools and universities. This broad cooperation is not meant as a huge retail center like the flower auction, but as a center where professional members of the cooperation like small and big furniture manufacturers, designers, researchers and educators can exchange and match ideas, services and products. These furniture centers should also be the marketing and sales window, as well as the knowledge center for the members of this cooperation of furniture professionals. Through these ‘furniture centers’, Europe could stay a major competitor in the furniture industry and at the same time keep and spread the local identity without relying on low wages.

On education

High-tech and low-tech, small and large furniture manufacturing companies and vocational education are closely connected, like chickens and eggs. A question is how to keep the marriage between schools and manufacturing companies useful, exciting, interesting and fruitful for both? My answer would start with another question: why would anyone want to work in the furniture trade? As an educator, I have to deal with this question every day because I am the intermediary bringing young people from their parents’ homes to a world of responsibility and professional work. Youngsters who choose a vocational training don’t generally think about the money they will earn;
they often have no idea, and if they do, they quickly figure out that becoming a fine woodworker or furniture maker is not going to make them rich in most cases.

What motivates young people to become fine woodworkers or furniture makers is the realization that it is nice to work with both one’s head and one’s hands. The experience of creating a concrete product is fulfilling, and the intuitive feeling they have for the material of the craft is crucial too. What pulls people to the fine woodworking or furniture craft is the realization that it is nice to work with one’s head, hands and heart. Unfortunately, working in the furniture trade is still considered a blue collar job and the social inferiority of wearing a blue collar is still very much present in Europe; it’s a residue of having a nobility.

In order to overcome this, we should make an effort to show how fulfilling it can be to use one’s head, hands and heart in conjunction, and how exciting it is to be part of a long and continuous tradition of the handcraft with the chisel while steering your robot from behind your laptop.

A vocational school, per definition, should focus on the complete breadth of the trade and not on separate tasks. How to train this craftsman should be the central question for vocational training. These years should be a base from which the student can grow into a small craft artisan or an industrial manager. In training programs we should make a clear distinction between the training of a machine operator and a craftsman; they are not the same, even though the craftsman should be a machine operator!
A similar dilemma about old and new skills is apparent in the question if the dovetail still belongs in training programs. In my opinion, a vocational training institute that does not require students to master the manual dovetail deprives its students of excellent training in 3-dimensional insight, true understanding of the material, learning what precision means, and the dovetail is simply an inspiring challenge for most people. If you ever have seen the proud and smiling face of a person who just finished his or her first row of dovetails, you will agree. On the other hand, a vocational institute, and they still exist in Europe even at the highest (university) level, that doesn't incorporate CAD/CAM, logistics and management skills, and problem-solving abilities is not preparing its students well for the reality of the current market. To motivate them, young students have to be able to project themselves into a challenging future where a role can be assumed that reflects individual talent. Digging a well to the source of students' individual talents and dreams is the most important goal of an educational institute, which means that a modern vocational school should merge the characteristics of the artisan and the industry in its program because there are talents for both out there.

To do so, students should be confronted with as many aspects of the trade as possible, and because the fine woodworking trade is very broad, a vocational institute in fine woodworking, like my school, should offer courses in several wooden products that have something to do with wood like: furniture and cabinet making, wooden boat building, house frame building, toy making, instrument making, etc. If a vocational training chooses to focus on furniture alone, ideally, other materials with their tools, and specific skills needed to work with these materials, should also be taught.

The level of vocational training is another point of attention. During a Master Class at the Rijksmuseum in early October where I gave a lecture on visual presentation, a very interesting discussion took place during the presentations of the students that contained a lesson for current and future furniture makers on the necessity for new furniture topics in higher education. The Master Class brought experienced restaurateurs, conservation scientists, and art historians together from Australia, the US, the UK, Norway and the Netherlands to study 17th century flat cabinet doors with the help of X-ray photography.

On the left, you see two examples of a Dutch star cabinet from the 17th century. The blind wood of these cabinet doors was, in most cases, constructed with boards and cleats that are connected with tongue and groove, and nails. This blind construction of boards and cleats is covered with elaborate marquetry. The discussion focused on the visual damage to the surface of the boards due to the underlying construction.
In most 17th century cabinets it seems that the tongue is connected to the cleats. My first reaction, based on my own formal training as a furniture maker and designer, was that the tongue on the cleat is wrong because it will break out more easily. Nevertheless, the discussion changed my thinking on this joint. If you look at the left most picture, you see the tongue on the boards, so the boards are the male part. If this joint fails by forces that rotate the cleat backwards (left most) or by forces that twist the cleat from the boards (next from left), two cracks will appear. If, under the same forces, the construction with the tongue on the cleat fails, you get only one crack that will show itself through the veneer. Therefore, the 17th century furniture makers were not that crazy. To reduce the chance of the tongue on the cleat breaking, we should find the right proportion between the forces A:B:C, and there is no answer to this question. I know that nowadays we would make a flat door like this, with mdf, but we still have no idea about the right relationship between A:B:C. Ideally we should discover a rational rule, and I don’t mean the simple rule of thumb used by most woodworkers (tongue 1/3 of the thickness of the board), but a rule that incorporates the internal forces of the wood and the inertia based on the geometrical proportions of A:B:C. If we could rationalize this rule, and many other rules of thumb, I am sure we could save enormous amounts of material, optimize the logistic process, and increase the quality of our furniture products. The world of conservation and restoration knows master programs like at West Dean in Great Britain, Carl Mansfeld school in Stockholm, and the restoration and conservation program at the University of Amsterdam. I am convinced that an investment in vocational training institutes, technical universities, and the logistic infrastructure incorporated in places like the ‘Furniture auctions’ I talked about before, could lead to a new and profitable European furniture trade that is ready to succeed on a local and a global scale.

We are now going to start talking about vocational training in Europe, which I am very much looking forward to, but there is one thing I would like to mention first. Please let us keep it simple and leave the educational bureaucracy out. During my teaching career I have already experienced three major educational renovations that made education so complicated that, at my school, we need 2.5 full time educational scientists to support teachers in the production of formal documents.
One example of keeping things simple while focusing on the heart of the issue is the Valiwood project, which is an Internet based validation tool for wood industry competences. The Valiwood system seems to be open to a large diversity of competence profiles and levels of education, and is capable of describing the whole scope from industrial machine operators to highly skilled craftsmen. While I doubt if the ministries of education in the different European countries are willing or able to adopt this system, I think the ‘Valiwood profile’ and ‘the 12 recommendations on education and training’ are a good starting point.

I hope the statements taken from this vision shine some extra light on our mission, and I wish you all a good lunch and fruitful discussions throughout the seminar.

Thank you very much for your attention.

Erik Groenhout

E-mail: e.groenhout@hmcollege.nl/

Erik_Groenhout@hotmail.com