TID 2011 Award
Taiwan Interior Design

空間家具 Space furniture
自在 Freedom
竹工凡木設計有限公司 CHU-studio

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自在 Freedom

當代設計師的使命

本作品為受邀參展之作品，展覽主軸希望能針對當代「節能永續」的議題出發。而室內裝修業一直以來都是相當耗能的產業，由其是木料的使用更是驚人。有鑑於此，本作品所使用的材料為廢棄角材或工地剩餘角材，期望透過設計手法給予廢棄角材新的生命，也企圖透過本作品傳達當代設計師新的使命，如今設計產業已非當時工業革命時期(Industrial Revolution)一昧地製造生產，設計師當代更重要的任務是要往化腐朽為神奇的方向邁進，為永續節能盡一份心力。

「自在」的四種態度

永續性(Sustainability)
材料上使用廢棄角材，有效再利用木頭資源。

形態性(Typology)
我們企圖回應中國人一直以來對於「坐具」的思維-「一種或坐或臥的自在」。

數位性(Digitality)
透過電腦輔助設計系統(CAD/CAM)，將抽象設計轉化為現實，並在製程上做到模矩化，有效降低成本。

藝術性(Artistry)
我們設定這把「自在」，除了滿足「坐」與「臥」的基本機能外，不使用時還是空間裡的藝術品，甚至給予一絲佛學的氣息。


作品[自在] 實體拍攝


作品[自在] 實體拍攝

The mission of contemporary designers

"Freedom" is invited to be on display at Taipei World Design Expo 2011 with the theme of "Green and Sustainability". Interior design business is often considered not earth friendly as so much woods are used in construction, and so much redundant woods are thrown out simply because people don't have any other way of re-using them. Given above reason, this chair is designed and made entirely out of discarded woods. As green designers, we not only want to show that these waste woods scraps can be recycled and turned into innovative and stunning pieces but also make people more conscious about the environmental problem.

"Freedom", the concept of design involves four attitudes

Sustainability
The chair is a green design made from different types of abandoned wood materials.

Typology
The chair features the characteristics of traditional Chinese chair and echoed Chinese attitudes toward sitting posture, which is the freedom of sitting or lying.

Digitality
We combine waste wood with advanced design process(CAD/CAM), turning abstract design into real piece, and employ modular production method to lower the cost.

Artistry
In addition to its function, with Zen atmosphere, the chair can also be an artwork or nice décor in the space.

坐臥之間，但求自在

中國人最早並沒有所謂有靠背的「椅子」，而**中國人對於椅子的觀念受佛教影響甚遠，佛教的彌勒**通常高坐於座位上，垂一足或雙足，有時雙足交叉下垂、有時雙足下垂、有時右足下垂等，而這樣或坐或臥的姿勢隨著佛教的盛行也影響中國人對於「椅子」的思維。比如先秦時代的人民們就已發展出一套完整**「席地而坐」**的文化，「席」則成為當時日常生活最普遍的坐具。直到戰國時期後，低型的家具，比如「床榻」就為當時常用的坐具，到了魏晉時代則流行獨坐式小榻，這種小榻也有兩人坐的，而漢唐的「韓熙載夜宴圖」，更能讓到古人以「榻」和「羅漢床」為中心待客的場面，當時的「坐具」已有了複合性的機能。到了清朝，清朝人或臥或坐著吸鴉片的景像歷歷在目。因此，**或坐或臥是中國人幾千年來對椅子的詮釋與發展歷程**。

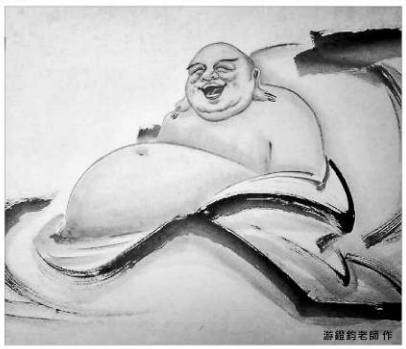

張善孖老師 作


韓熙載夜宴圖


韓熙載夜宴圖


清朝-鴉片


清朝-鴉片


游鏡鈞老師 作


作品[自在] 實體拍攝

Sitting or lying? It's your freedom

It is said that originally there was no chair in China. Around AC 200 Buddhism entered China and brought with it the idea of the Buddha sitting upon a raised platform. The sitting or reclining postures of the Buddha began to have a great influence on Chinese concept of chair. History shows that in early period, woven mats, which sometimes accompanied by arm rests or low tables, were commonly used by ancient Chinese to sit on floors. The raised platform evolved as an honorific seat for special guests or officials, and longer version of mats were used for reclining and evolved into bench, daybed and bed with multiplex functions.

從設計到施工過程
Process from Design to Construction

Stage1
木作角料收集階段
Collecting redundant wood materials stage

Stage2
設計原型生成階段
Design stage

Stage3
概念模型生成階段
Conceptual model stage

Stage4
1:1 原型生成階段
1:1 prototype stage

Stage5
CNC 加工作品階段
CNC production stage

從設計到施工過程

設計前期階段：我們從資料中定義幾個動作和尺寸，在電腦環境中設計出我們期望的形體(figure)，並利用快速成型技術(Rapid Prototyping)輸出實體模型來進行設計討論以及與工班的溝通，並在電腦中進行分析與修正。

施作第一階段：由於是利用回收的角材，我們必須計算後將之處理成合適並統一的斷面，並在曲面強度不同的地方進行材料分配設定，並開始精確放樣，組立粗坯形體。

施作第二階段：以第一階段粗坯為基礎，開始進入電腦數控加工(Computer Numerical Control)加工成形。從前必須計算好材料與時間，往往十分耗時耗工，本案因借助電腦參數化控制系統(Parametric Design Process)，節省大量操作時間及成本。

小結：「自在」從設計到施工的過程，都透過電腦輔助設計系統(CAD/CAM)及電腦參數化設計流程(Parametric Design Process)精密控制，企圖在一定的預算內，將無秩序的物件模矩化與製程化，化腐朽角料成為神奇藝術品。

Process from Design to Construction

At the beginning：
we defined several postures and dimensions to design and adjust the figure we want from CAD/CAM programs, and then Rapid Prototyping technique was used to read in data from our CAD/CAM drawing to produce physical models.

Phase 1 of construction：
Recycled wood materials were processed appropriately with identical section before re-using and then distributed according to the chair's curve and intensity. After that, we were able to begin the layout and fabrication process.

Phase 2 of construction：
Based on Step 1, the computer file was loaded into the Computer Numerical Control(CNC) machines for production. It significantly reduced the time and cost required to produce a free-form or geometric feature in comparison with the past.

Conclusion
With CAD/CAM system, Parametric Design Process, modular production method and budget control, we successfully combined waste woods and computerized design process, turning salvage into stunning artwork.

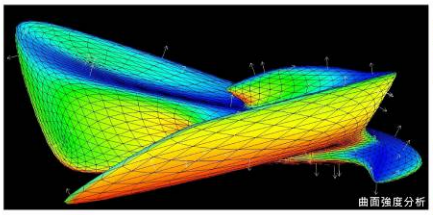
木作角料收集階段 Stage 1
Collecting redundant wood materials stage

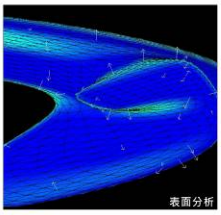

角料收集

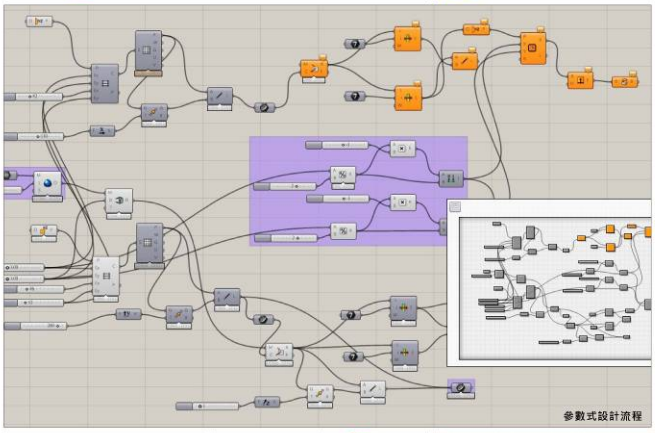

角料試組裝

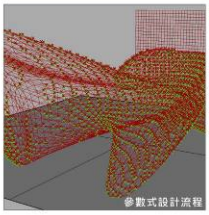

角料堆疊

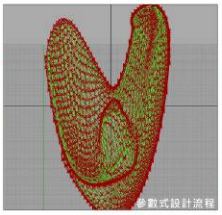
設計原型生成階段 Design stage Stage 2

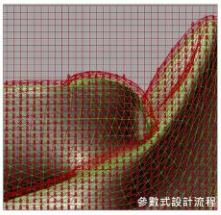

曲面強度分析


表面分析

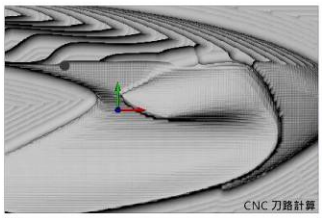

參數式設計流程

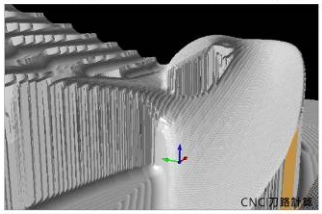

參數式設計流程

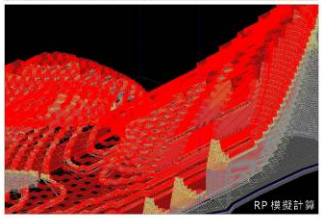

參數式設計流程

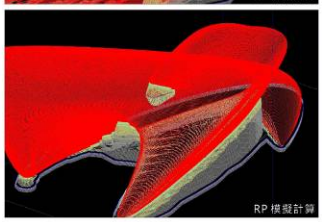

參數式設計流程

概念模型生成階段
Conceptual model stage
Stage 3


CNC 刀路計算


CNC 刀路計算


RP 模擬計算

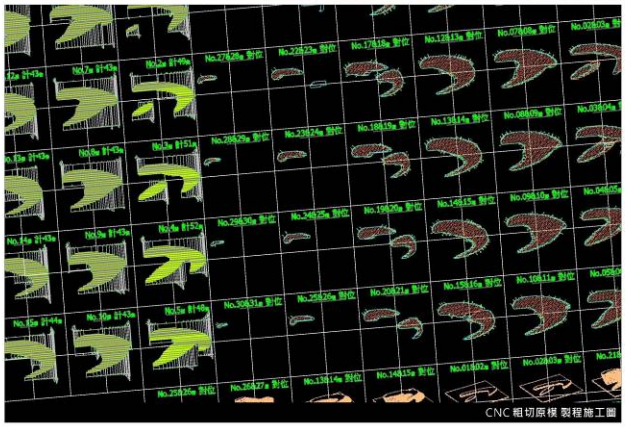

RP 模擬計算


RP 實體模型

1:1 原型生成階段
1:1 prototype stage
Stage 4


CNC 粗切原模


CNC 切割測試過程


CNC 粗切原模 製程施工圖

CNC加工作品階段
CNC production stage
Stage 5

自在 freedom


CNC 測試切割


CNC 大型切割機台


作品[自在] 實體拍攝


作品[自在] 實體拍攝