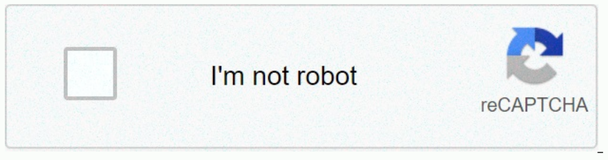

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Reciprocal frame architecture in japan

A simple three-stick frame Mutual frame - a class of self-security design of three or more beams and which does not require a central support to create roofs, bridges or similar structures. Construction Mutual roof is collected by the first installation of a temporary central support, which keeps the first rafter at the correct height. The first rafter rafters between the wall and the temporary central support, and then added further rafters, each of which relies on the latter. The final rafter is placed on top of the previous rafter and under the very first one. The rafters are then tied with wire before removing the temporary support. [1] Failure of one element may cause the entire structure to fail. The history of the Mutual Frame, also known as the Mandala Roof,[2] has been used since the twelfth century in Chinese and Japanese architecture, although there is little or no trace of these ancient methods left. More recently, they were used by architects Kazuhiro Ishii (House of Spinning) and Yasufumi Kijima, as well as engineer Yoishi Kang (Kijim Stonemason Museum). [3] Willard de Gonnecur produced sketches showing similar designs in the 13th century,[4] and similar structures were also used in chapter house of Lincoln Cathedral. Josep Maria Jujol used this design in both Casa Bofarull and Casa Negre[6] Gallery References ^ How to Build a Mutual Roof Frame. Archived from the original on 2015-04-19. Retrieved 2014-05-27. Architectural press. 2008. ISBN 978-0-7506-8263-3. In the 1990s, the 1990s Leonardo's Wooden Roofs and New Structural Research (PDF). Nexus network log. 10 (1): 27. [dead connection] ^ Mutual frame architecture. The 14-1930s and 1930s mutual frame architecture. The 1990s and 1990s were in the 1990s. Related: Http://www.ambigu.com/2015/05/17/1990s/1990s/1990s/1990s/1990s/1990s/1990s/1990s/1990s-1990s-1990s-1990s-1990s-1990s-1990s-1990s designed for the medium build building: An example obtained from Based on previous research and having an idea of the recently completed innovative examples of the Russian Federation, I have studied the possibilities for innovative configurations of the RF complex in seminars held at the Royal Danish Academy of Fine Arts of the School of Architecture in Copenhagen (KADK). They were planned as intensive, week-long practical training sessions. Students were first introduced to the principles of the Russian Federation, followed by small studies, after which one of the developed models was chosen for scaling and built in a full-scale (Cavanagh 2012). The seminars were attended by third- and fourth-year students without prior knowledge of RF systems. It should be noted that the models of the Russian Federation were built in a single single Therefore, it was important to use simple connections that allowed easy, fast construction, as well as easy disassembly. For large-scale models, students used 1m widow wooden rafters with a square section, with four equally spreading carnivores. In several examples presented below, the same wood rafters were used. They remain packed and are waiting for their next application in future workshops. From small to large scaleSome small-scale models are presented in Fig. 2. It is clear that they are of different quality, both in terms of skill and level of practicality and possibility of development in the large-scale structure of the Russian Federation. However, it is important to note that small studies were aimed, firstly, at giving students the opportunity to learn about RFs at the basic level and feel how they can be formed and, secondly, giving them the opportunity to develop new forms of RF and configuration.Fig. structure: they clearly showed what is possible and what is not. The seminars were structured in such a way that, usually after 2 or 3 days of working with small RF structures, students will present their work, and one of the small models will be chosen for scaling in full size. Production in large-scale Russian models, which were chosen for scaling, were built externally on the basis of KADK. They were exhibited for months, after which they were dismantled and the timber rafters were packed and stored for later use. The first large scale of the Russian Federation in the series, built on KADK, is a model shaped like double-curved wings of the RF-structure. It was scalable and built in one day. Since only part of the small-scale model was scaled (Fig. 14), and to avoid vertical supports, the cables were used to put two wings in tension and stabilize the structure. The wing design consisted of a grid formed by four members of the solitary units of the Russian Federation. It was about 7 m long (Fig. 15, 16).Fig. 14Cephysion of the wing shown in Fig. 14. Different curvaments can be achieved by resizing the rafters and the size of the single units of the Russian Federation and their relative proportions. This is very interesting, because not only the structure has an imaginary shape, but also because the curved shape can be achieved with the help of straight elements of wood. This is a clear advantage of RFs because there is no need to use curved members: you can achieve curved shapes with direct members. Can imagine a wing of the Russian Federation used as a small shelter or garden game structure. In one of the other buildings of the Russian Federation again using the same wood rafters was designed and built in full (Fig. 17). During the construction of the structure of the Russian Federation was very rigid, although only simple connections were used to form temporary connections. Malonekaky model, where the first idea was developed, was a mesh structure consisting of several of these roofs, taken together. If further to develop, you can easily imagine the design as a single structure, and the roof above the glass house or garden retreat. Next, a canopy can be built from several such roofs to form a grid and create a roof over a restaurant or house, which required a clear function of span.Fig. b down cad model After the student workshop structural analysis was conducted to determine the forces, points and deflections. Currently, further research is being carried out for the mesh structure consisting of several roofs of the Russian Federation, so that it is possible to determine the general behavior of the grid (Fig. 18, 19).Fig. 18The structure of the deflections of the roof of the Russian Federation On Fig. 12. 19Saving force and moment scheme The third building using the same wood rafters was the development of a full-scale tower of the Russian Federation (Fig. 20). The tower behaved like spring: it was extremely flexible. This was very interesting because the same members with the same type of connections created a completely different structure. This, of course, could be, adding additional connections to stiffen the structure. By stiffening it and developing it further, you can easily imagine it as a play structure on the school playground.Fig. 20 Fig. 21 A variation of the tower was developed using wooden poles with a circular section and a bolt joint to construct an RF design for an art exhibition. The design, approximately 6m tall, was built and exhibited at the Kiwi Art Centre in southern Sweden in 2011.2 In addition to the sculptural function of the structure, it was intended to inspire and evoke ideas for a new use of mutual frameworks (Topwick Larsen Olga 2012) (Fig. 21). Some other sculptures of the Russian Federation, built in full, are presented in Fig. 2. Ebrahim Pirozfar (Poorang), Amir; Hamauzu, Tadashi; Kang, Joici; Larsen, Jens; Ash, Fred; Popovic Larsen, Olga. Photographer/s: Bavarel, Olivier; Bertin, Vito; Blundell-Jones, Peter; Hamauzu; Ishiy, Kazuhiro; Kang, Joici; Popovic Larsen, Olga; Thys, Andy; Wrench, Tony. Photographs courtesy: Hugh Adamson; Keikaaku-Inc.; Mr. Looni. Number: 978-0-7506-8263-3: at 246mm, 196p. Publisher: Elsevier Ltd. www.elsevier.com Published in: 2008 Mutual Frame Architecture examines a specific architectural feature in detail, looking at examples of form from Japan, England and America. Author Larsen includes a large detail of the structural capabilities of the form, without hesitation to indicate its limitations. So the book establishes itself as an extremely valuable resource that explains the little-known structural format and shows how best it has been realized. The mutual frame is the design of the roof, through which each beam reaches from the top of the wall to the center of the room at an indirect angle, followed by an end resting on the top of the beam next to it. When the full circle of these beams is complete, the roof is self-interested without any central supports and creates a spiral pattern of beams on the singing of the ceiling. A mutual frame that is not a widely used term essentially requires a circular - or polygonal - shaped room to be used, but Larsen explains how the structure is a little more flexible than it may seem at first glance. Larsen has created a book that strikes an excellent balance between text, photographs and drawings. The text is always very well written, and it presents a series of discussions with a number of featured designers as a narrative that beautifully changes the flow of the book. The photos complement the text, but not the focus, are mostly quite small. The drawings that accompany the text always perfectly capture the structural points that are discussed, so that a reader with any level of engineering knowledge can follow along with intricate structural features. The book is divided into twelve sections, which are divided into two rough halves. The first half explains the qualities of the mutual frame, from its history to its morphology to a very detailed study of its structural properties. The history of the form is particularly interesting, as there are several examples from hundreds of years ago of structural forms that used similar layouts, including several from Leonardo da Vinci quite interesting. The section on these structural properties is quite dense and does not offer a huge amount to the reader without the required level of engineering knowledge, but all of these sections generally give a very solid grounding in what a mutual framework is and what it can do, and Larsen provides an extra level of potential insight for a reader with previous experience in complex structural properties. The second half of the book runs through a number of different structures that demonstrate a mutual framework in the real world. Most of these examples come from Japan, which has a long tradition of complex wooden structures. Works by designers Kazuhiro Ischia, Yoichi and Yasufumi Kijima show several different structural forms for the mutual frame. Interestingly, in Japan, the term mutual framework makes no sense constructively, since it was designed by British designer Graham Brown, and so each of these designers arrived at this shape of the ceiling on their own. Brown has a large presence in the book, as even though he is not a well-known member of the design profession in Britain, no one else has done so much to recommend and popularise the structural shape. Brown was a major source of knowledge for Larsen in writing this book, and he works almost exclusively in mutual framed houses. To finish this half of the book, there are some smaller examples of mutual framed structures or buildings with very similar design features. Mutual frame architecture is a very valuable book. It casts a spotlight on a little-known architectural feature that can be used to great effect. Larsen does not establish a mutual framework as an ideal solution to any architectural issue and makes a point of nurturing problems that a frame can create, but it does a fantastic job of showing where the frame is an appropriate feature, constructively speaking. This book is very interesting as an introduction to this unique architectural feature, as well as providing an additional level of information that more experienced readers may prefer. Prefer.