Use Guide - C.I.S.P

Summary

Welcome to C.I.S.P (Computer Implemented Site Planning) - This is a program developed by Christos I. Yessios in the early 1970's at Carnegie Mellon University for his doctoral dissertation in Computer-Aided Design. This is a recreation of that program based on two key papers, first is Yessios's dissertation itself titled Syntactic Structures And Procedures for Computable Site Panning (1973), and the second is a 10-Page paper Yessios published a year earlier (1972) titled Modelling the Site Planning for Homogeneous Uses.
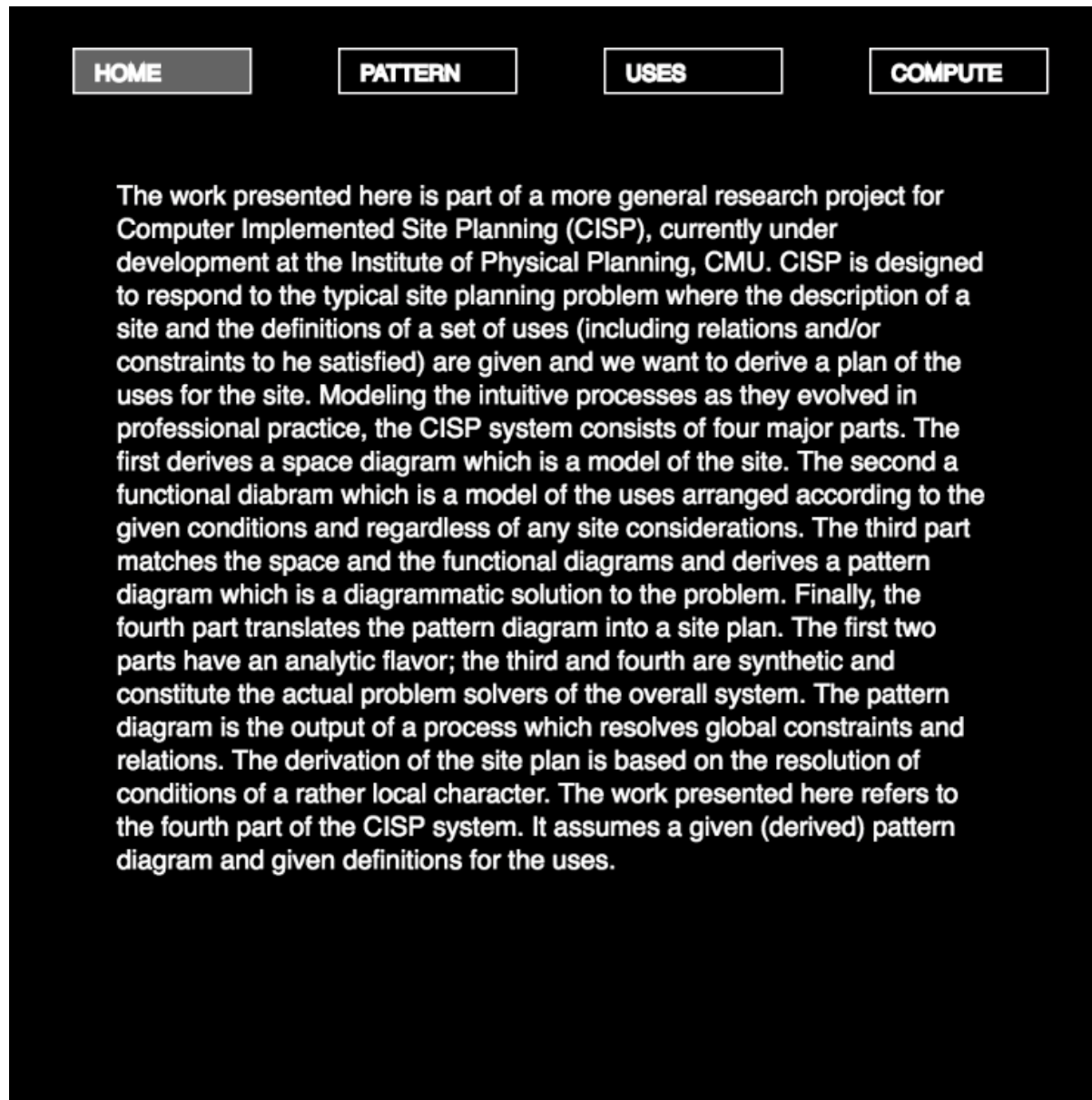
It must be noted that the above program is based primarily on his 1972 paper, and that the dissertation has been used as conceptual reference. In the dissertation he majorly expands upon the implementation of the 1972 paper to broaden the scope of the computation significantly.

Overview
The following steps are what is involved in the usual workflor for using C.I.S.P as a site-planning tool

1. Define "pattern" curves on site - both in terms of geometry as well as attributes
2. Define "use" curves on site - same as above (however use curves are only orthogonal)
3. Match/Map "pattern" and "use" to each other
4. "compute" the solutions to the above definition
5. Redo based on feasibility of solution

1. Home Page

HOME   PATTERN   USES   COMPUTE

The work presented here is part of a more general research project for Computer Implemented Site Planning (CISP), currently under development at the Institute of Physical Planning, CMU. CISP is designed to respond to the typical site planning problem where the description of a site and the definitions of a set of uses (including relations and/or constraints to he satisfied) are given and we want to derive a plan of the uses for the site. Modeling the intuitive processes as they evolved in professional practice, the CISP system consists of four major parts. The first derives a space diagram which is a model of the site. The second a functional diabram which is a model of the uses arranged according to the given conditions and regardless of any site considerations. The third part matches the space and the functional diagrams and derives a pattern diagram which is a diagrammatic solution to the problem. Finally, the fourth part translates the pattern diagram into a site plan. The first two parts have an analytic flavor; the third and fourth are synthetic and constitute the actual problem solvers of the overall system. The pattern diagram is the output of a process which resolves global constraints and relations. The derivation of the site plan is based on the resolution of conditions of a rather local character. The work presented here refers to the fourth part of the CISP system. It assumes a given (derived) pattern diagram and given definitions for the uses.

This is the landing page for C.I.S.P. Navigation occurs by clicking on the buttons above labeled "Pattern", "Uses" and "Compute" (notice the highlighted button showing you where you are).

Typically you want to go left to right, being by clicking pattern and moving on to use and then compute when you are done.

2. Pattern Page

HOME   PATTERN   USES   COMPUTE

Draw Pattern Curves

Define Pattern Curves
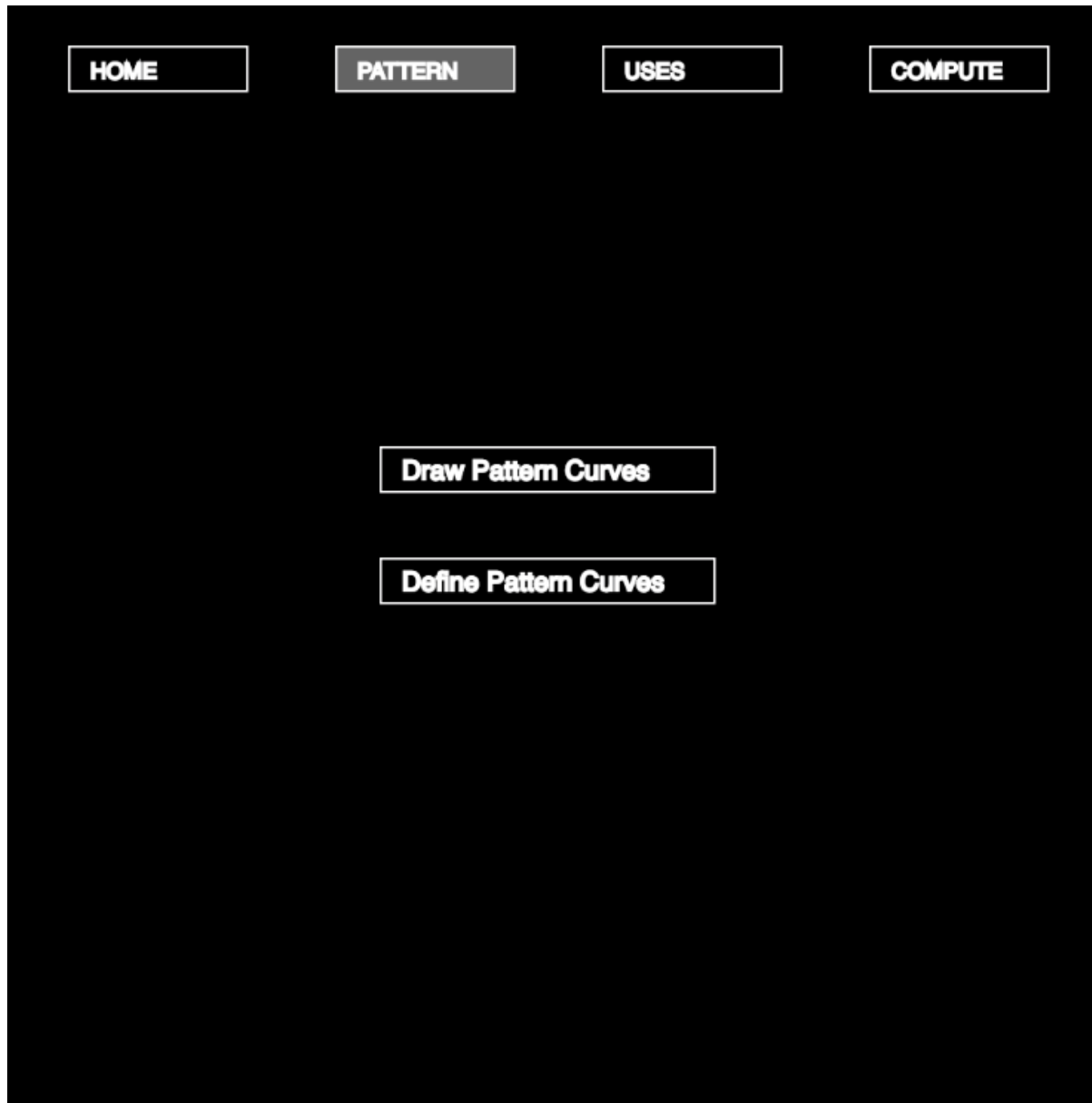
Now you're on the "Pattern" page - here you're able to define the general curves that serve as the driving / defining geometry for your site division. These curves can be best understood as the curves on which you wish your housing units to be arrayed on.

Begin by first clicking on the "Draw Pattern Curves" button to define your geometry.
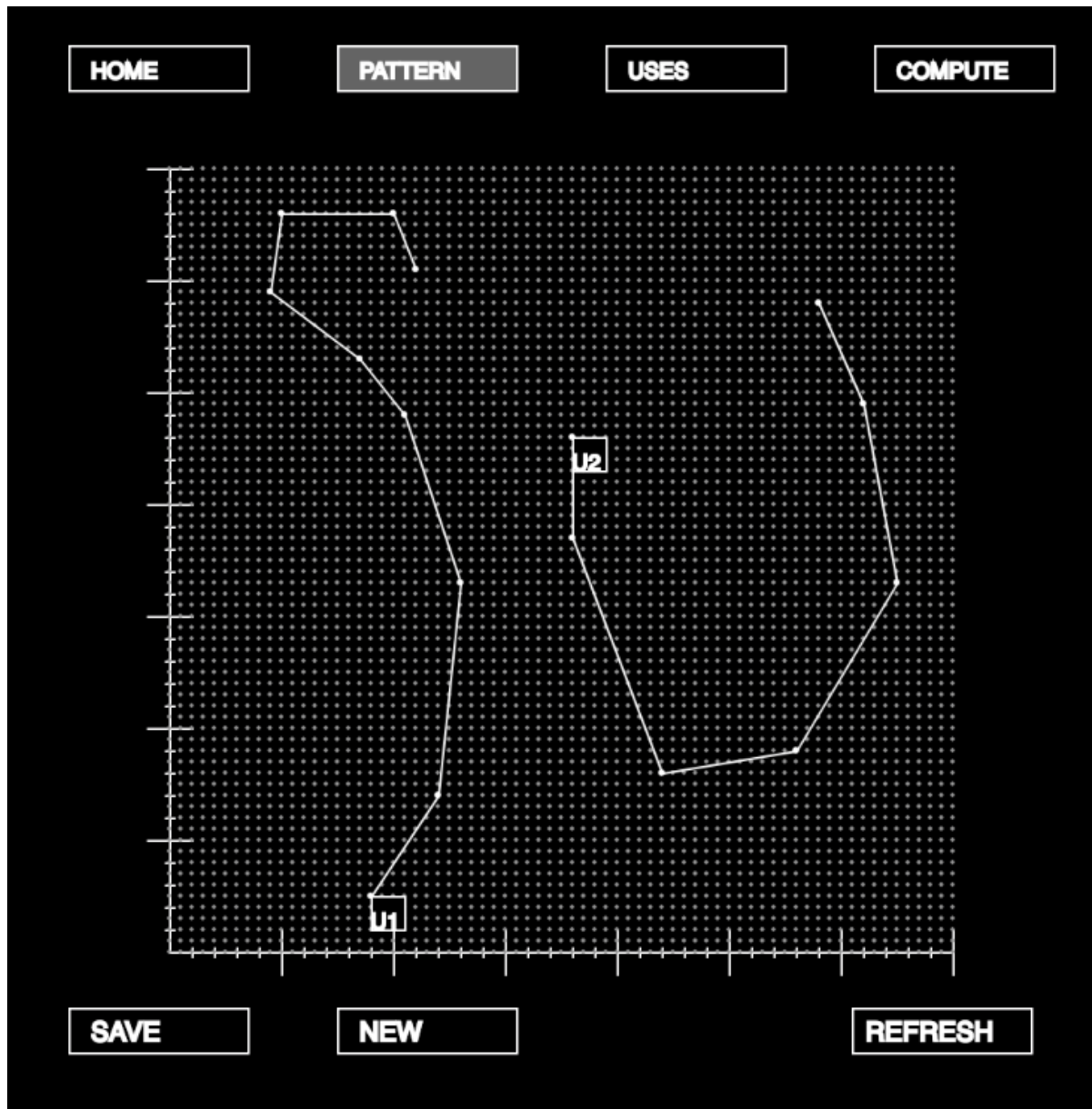
2.1. Draw Pattern Curves
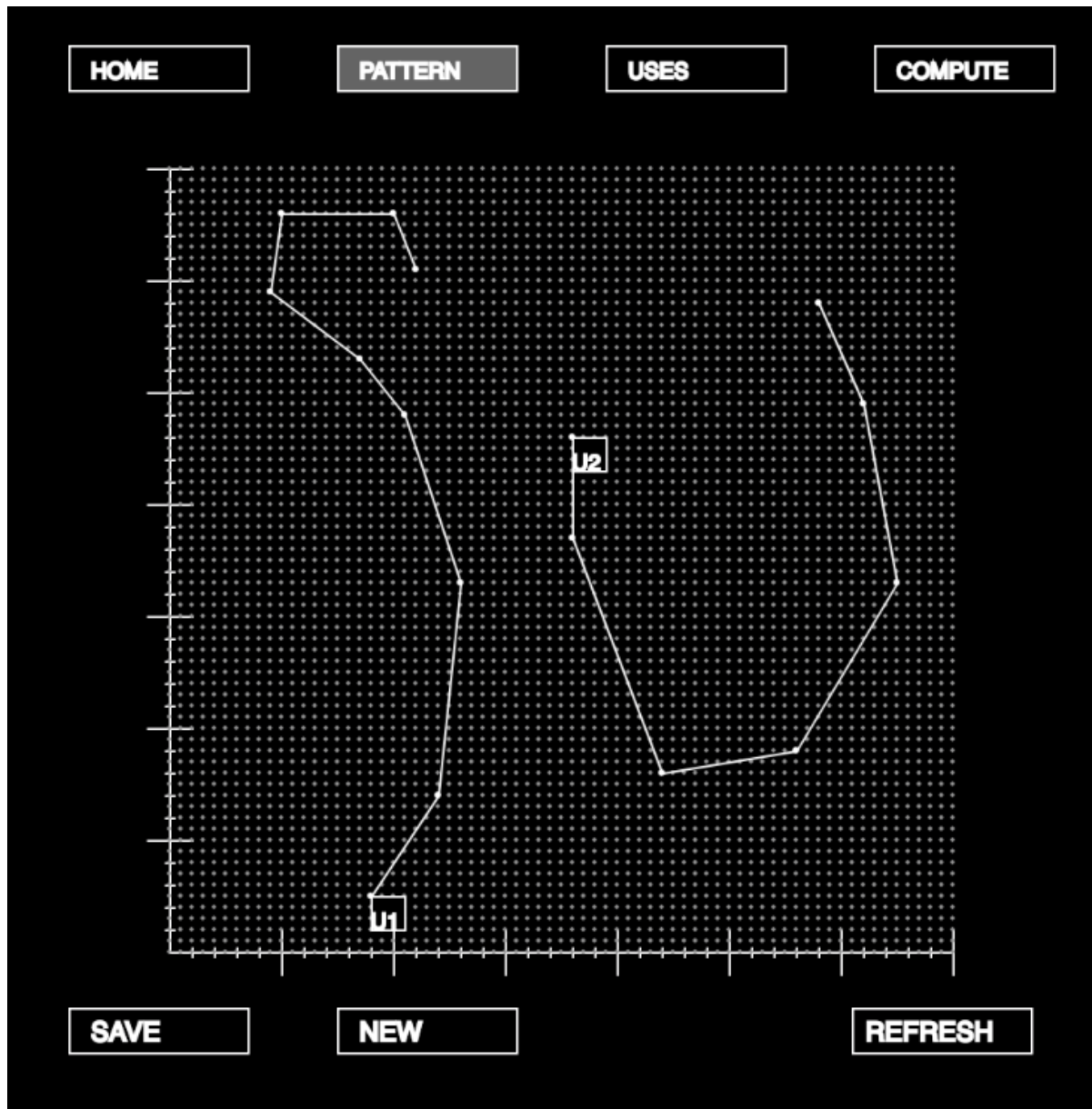
Here, you'll be drawing the pattern curves which define your site constraints. In order to begin drawing click on the "New" button at the bottom center of the page and then define your curve as a set of points (the system will automatically create the geometry associated with those points for you). You can draw multiple curves in one page (simply click "New" everytime you wish to do so)

Once you're done with drawing the cuves, click "Save" and it will take you back to the pattern page.

After going back, click on the "Define Pattern Curves" button.

2.2. Define Pattern Curves

You'll need to give your pattern curves attributes to be able to use them as site geometry. Click on the box at the end of the curve to change the attribute in these curves.

Usually, you want to define your curves starting with a parameter "U" and a numerical operator (0-9) after that. This numerical operator will link the curve directly to the "use" units you will define in this next part.

Once you're done, click on the "Uses" button up top.

3. Use Curves
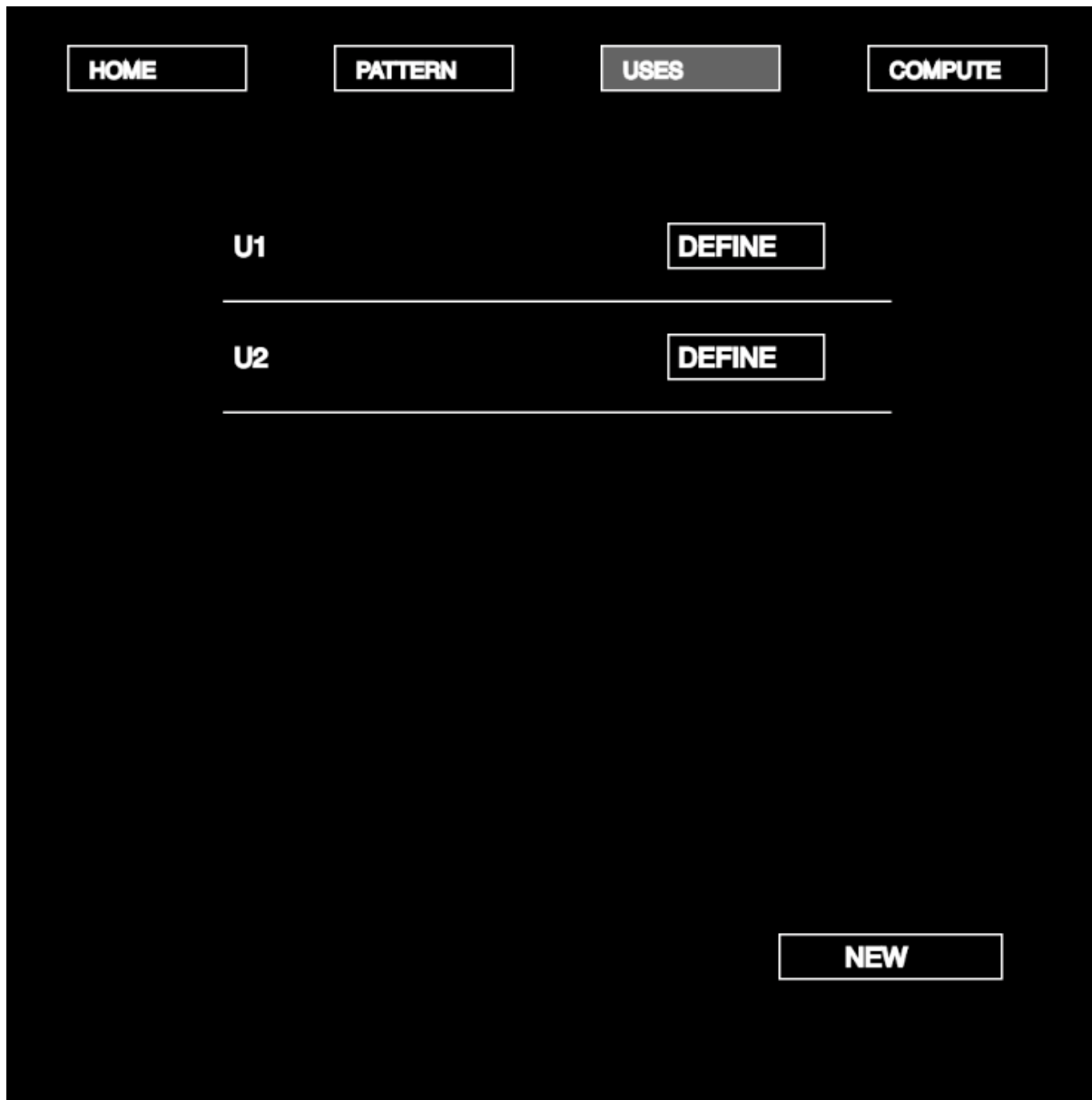
Now you're on the "Use" panel. Here, you want to click on the "New" button in the bottom right to initialize new "Use" curves - these will auto-generate with a "U" prefix and numerical suffix - these link directly to the "pattern" curves you defined earlier.

"Use" curves are essentially units that you wish to array on your previously defined pattern curves, with certain constraints in mind. These can be lots for houses, buildings or other things.

Next, click on the "Define" button to begin drawing and defining your use curve.

3.1. Defining Use Curves
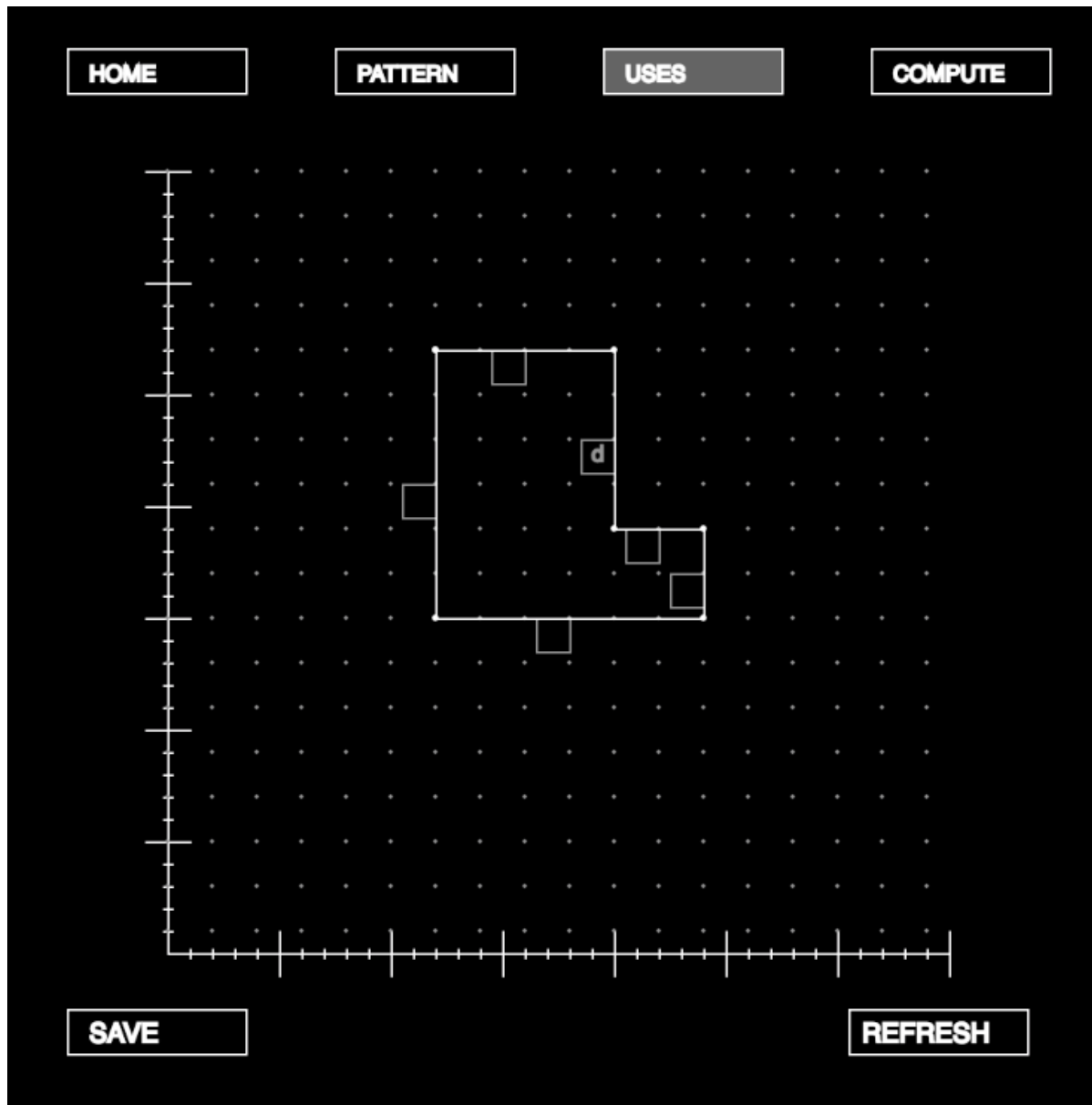
Here, you want draw your "use" curve. Click on the screen to begin drawing. Your drawing will always consist of orthogonal curves as constrained by the system.

Note: you must close your curve in order to be able to leave this page.

Once you've closed your orthogonal curve, you can give each side an attribute associated with a type of building element - the types currently implemented are "d", standing for door and "v" standing for view, or window. You do this again by clicking on the rectangular boxes next to the sides.

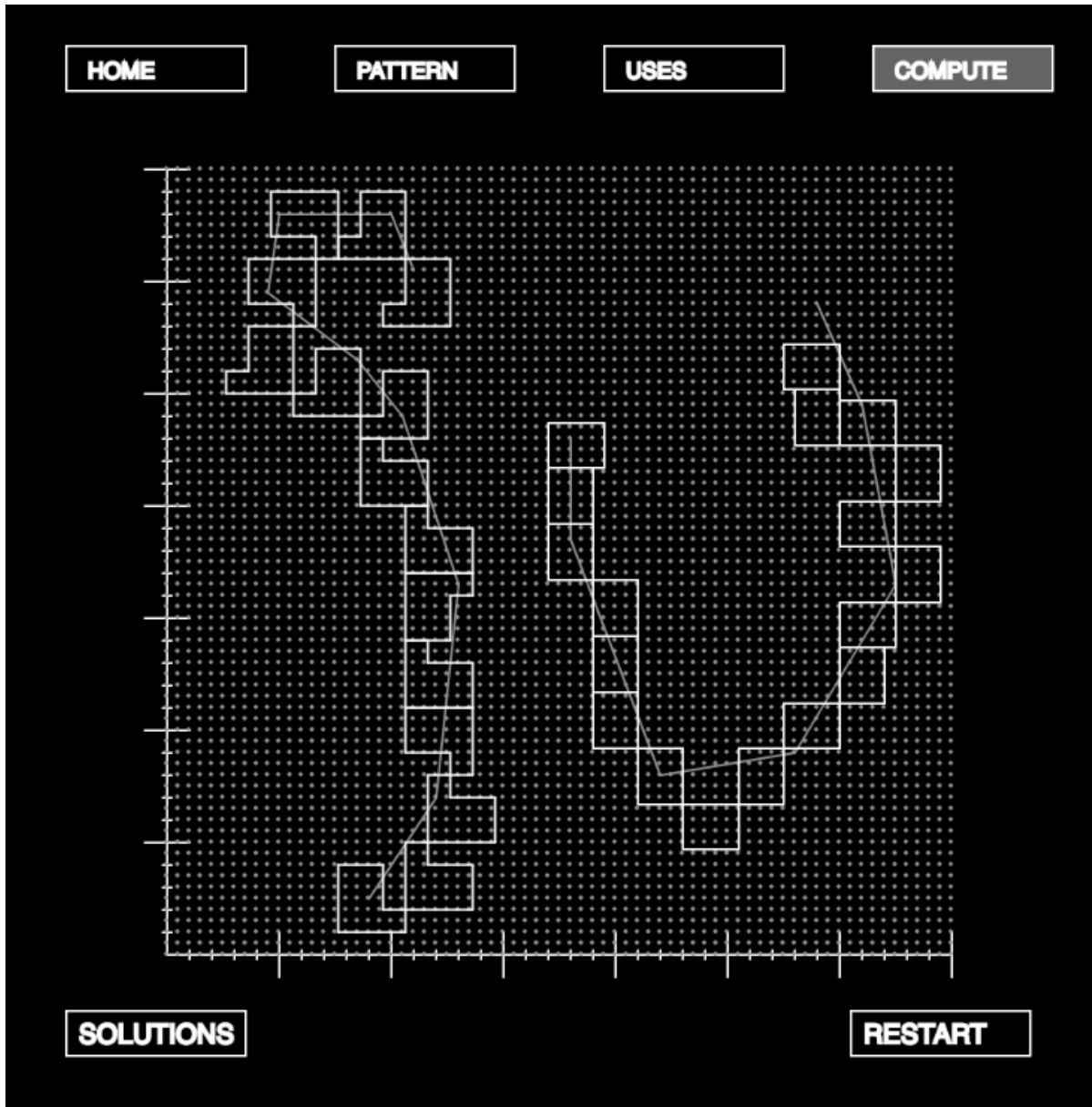Note: These curve's will by physically 1/4 their size when you try to compute them.

Next, hit save and move on to the defining your second use curve.

3.1. Defining Use Curves
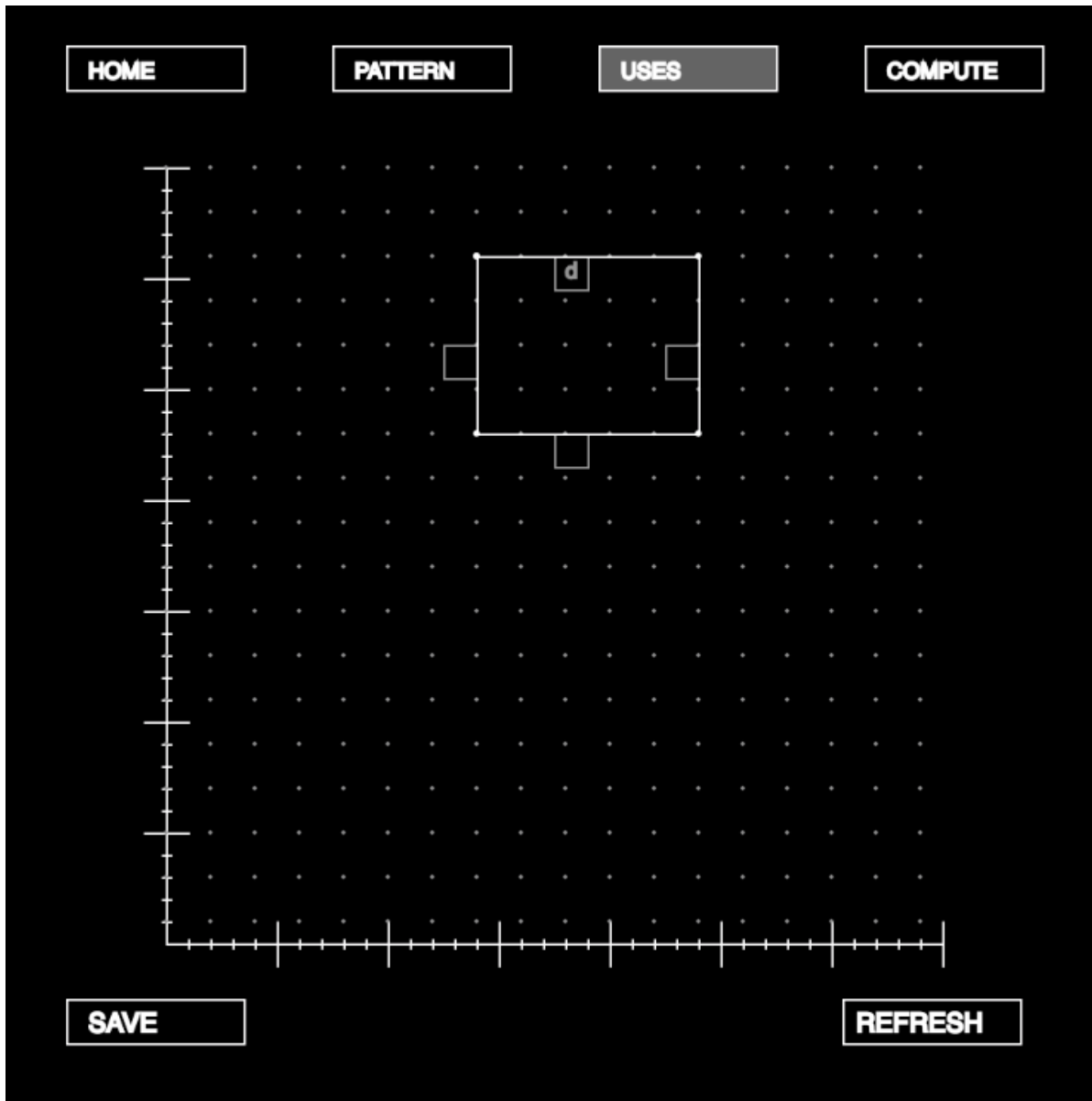
Here, we're defining the second use curve, which in this case is a square. Click save and then hit the "compute" button.

4. Computed Solution

Here, click the "solutions" button to see what the system produces based on your constraints. The result is shown in the image on the left. If you're unhappy with the solution you got, you can repeat the process above in order to reduce/increase the constriants or re-define pattern curves.

Note: The "Restart" button on the bottom erases all the geometry you've defined so far.

And that's all! This is the general workflow for using C.I.S.P