Generative Components

Name:	Bentley Generative Components V8i
Produced:	Bentely Systems, USA.
Operating system:	Windows
Native file type:	
Description:	Parametric CAD software for 3D solid modelling
Next version release:	
Homepage:	Generative Components
See also:	Parametric modelling Generative modelling Associative modelling Microstation
	Rhino
Link:	LEARN, The Catalogue
	Official Support Post a question to Media Centre
Introduction:	GC is a complex but very powerful associative and parametric modelling software. It works by creating and editing relationships between components. The specification of the relationship is paramount and, at the end of the day, just as important as the components the relationship links. It is by the control of the relationships between components that the power of GC is brought to bear. GC works in close collaboration with its more CADish counterpart Microstation , both of which are produced by Bentley Systems. From Wikipedia: *GC is parametric CAD software developed by Bentley Systems. GC has a strong traditional base of users in academia and at technologically advanced design firms. It epitomizes the quest to bring parametric modelling capabilities of 3D solid modelling into architectural design, seeking to provide greater fluidity and fluency than mechanical 3D solid modelling*. Users can interact with the software by either dynamically modelling and directly manipulating geometry, or by applying rules and capturing relationships among model elements, or by defining complex forms and systems through concisely expressed algorithms.
Primary functions:	GC is primarily used for: **1. Parametric and associative modelling** **2. Constructing advanced geometry** **3. Documenting/fabricating components** **4. Designing NURBS surfaces** Similar to GC in terms of functionality is the Rhino plug-in Grasshopper . Indeed, many users prefer to begin working in associative modelling with Grasshopper before moving on to GC. Usually advanced geometry without parametric input is easier in Rhino. GC is a far stronger program for associative modelling. See also ParaCloud and Digital Project. Also, with the rapid rise and sustained interest in parametric modelling, programs such as Revit are increasing parametric modelling functionality. Bear in mind of course that strictly speaking all BIM is by definition parametric.
Primary outputs:	GC¿s primary outputs include: **1. Documentation drawings** can be achieved from GC by exporting them (possibly via Microstation or other CAD) as DWG for post-production in Illustrator . However, it is usually recognised as easier and more effective to export your GC model/component in its entirety into a CAD program – Microstation is naturally the first choice - for subsequent documentation work. **2. Lasercutting (physical models)** can be achieved by exporting from GC to DWG for cutting. Or if necessary, exporting to Rhino for unrolling the geometry first before exporting again to DWG. **3. Digital 3D models** can be exported to 3DSMax or SketchUp (for example) for subsequent rendering. Outputting from GC is sometimes difficult. Two options exist, either through built-in functions inside GC (which are limited) or through the associated Bentley product Microstation (which are broader). Either way, things in GC are not as simple as File>Export functions in, say, 3DSMax

Usability:	GC is a reasonably difficult program to get to know. It requires a fair amount of learning to become competent with the software. Additionally, intermediate knowledge in maths (especially geometry) is a huge bonus, if not required and programming basics is essential (variables/ loops/ functions/ conditional statements etc). Unlike Rhino or 3DSMax where you can start to generate basic geometry within a few clicks, in GC the user needs to understand how associative modelling works before attempting to dive into the software. Each step must be carefully considered, as basic commands quickly build upon each other to develop complex relationships. These relationships are made visible through a graph editor which, if not thought through, can become messy and time consuming. However, all that being said, after a few of the basic tutorials have been completed (say five hours) you will be well on your way to getting the basics down pat. The interface is not at all intuitive and completely different at the end of the day to the vast majority of design related programs on the market. The interface is also not particularly visually appealing – it could be described as odd but appropriate. However, once time is spent with the software the user begins to see the strengths of its structure and layout. It is important to keep in mind that GC allows you to set up and construct 'programmed' instructions for 3D modelling. Hence the interface is set up appropriately for this. You don't find the button that makes a sphere, you instead find the function from a list and input the appropriate parameters. Commands in GC are inputted via both graphic menus and line commands. Interoperability is surprising good with GC. The software can leverage MicroStation's >Export an >Save-as functions.
Strengths/weaknesses:	
Learning support:	Online resources are improving constantly as the program gains in popularity. At the moment (Mar. 2010) online support is usually adequate to meet most user's needs. Intermediate A: Importing and exporting polygons Intermediate B: essentials Advanced A: Morhocode Tutorials Advanced B: Populated surfaces Advanced C: Cylindrical mapping
Additional:	You will also likely find interesting: Parametric Formations Morphocode Design Patterns Nick recommends: "Use the Help Files which include tutorials dedicated to the use of each 'function' (geometry construction) type in GC."
References:	
External links:	
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