

Layman's Photogrammetry

Taking images is the fastest and most reliable way to capture reality. Thirty years ago photogrammetrists dreamed of loading aerial images into a computer and within minutes retrieving - without human intervention - a fully detailed map. Soon, however, the multifaceted nature of image content became evident, and visual interpretation, so easy for human beings, proved too complex for transfer into computer algorithms. The dream evaporated. To date, commercial digital photogrammetric workstations (DPW) support at best semi-automatic extraction of points, lines (mostly roads) and objects (mostly buildings). A human operator approximately locates and identifies a feature, and then comes edge detection and matching algorithms or line-following techniques before the speed of the computer is utilised to extract the feature in its accurate position, in real time.

DPWs are cost-friendly compared to the opto-mechanical mastodons of the past, designed to avoid manual computation. The most costly component of a DPW today is its software. Prior to 1980 the main photogrammetric products were orthophotos and line maps. The introduction of GIS systems had by the 1980s created a wolverine, and DPWs enabled alleviation of the hunger for geo-data; purchasing a DPW requires only a fraction of the investment once needed to buy its analogue or analytical counterpart. The same budget can be used to spectacularly expand the instrumental capacity of an organisation. Of course, low price would be of little benefit in enhancing production capacity if one still had to rely on highly skilled people with good stereoscopic vision. But DPWs enable the job be done by laymen. Precise pointing has been consigned to history by matching algorithms that keep 'the floating mark on the ground'. The need for stereo vision is rendered similarly redundant. Hence a few days training is enough to teach the uninitiated the nitty-gritty of photogrammetric mapping, resulting in a potentially dramatic increase in human resources.

A second reason for images having become the main source of geo-data for GIS input is that low-price DPWs have made possible mapping outside specialised environments, where once analogue and analytical instruments had to be staffed around the clock for their cost-effective exploitation. Cost, together with ease of use, has removed equipment as an impediment to widespread use of [photogrammetry](#). Users outside photogrammetric organisations are increasingly carrying out mapping on an occasional basis. This is good news. However, there are issues. One can put a great deal of knowledge into software, but a basic level of understanding of theoretical concepts is required to fix any job well. If the result of a mapping task deviates from expectations, ignorance of the basics could inspire the layman to point the finger of blame at technology.