

# What's in a name? Biomedical photographic communications?

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**The Biomedical Photographic Communications Department at the Rochester Institute of Technology currently offers the only university-based degree programme in this field in the United States. With an enrolment of more than 80 students, the curriculum and its delivery are continually challenged by the 'new world' of imaging and the needs of the increasingly diversified industry where its graduates are finding employment. This paper reports on a recent self-study of the programme and examines the future directions for educating tomorrow's information imaging professionals. In particular, the paper evaluates the name of the department, which has become both an asset and liability in describing the programme to perspective students.**

## Introduction

The author has previously published a comprehensive overview of the Biomedical Photographic Communications Department of the Rochester Institute of Technology (RIT).<sup>1</sup> The article detailed the curriculum and the department's philosophy about teaching at that time. Since its inception in 1969, the Biomedical Photographic Communications (BPC) programme, more than 600 students have received a Bachelor of Science degree (a typical 4-year degree at USA universities) in this field with a placement rate of approximately 85%. Many of our alumni work in human and veterinary medicine facilities, in ophthalmology and related clinical opportunities, in forensic science laboratories or other life sciences-related organizations such as pharmaceutical companies or small educational multi-media companies. This paper looks at the current directions of the programme and reports on a self-study which began in 1999.

## Background

The imaging industry has undergone incredible changes during the last 5 years. Things are being done today with software and digital tools that were impossible to imagine just last year. The world of imaging products, software and new product releases can be overwhelming for both the initiated as well as the neophyte to electronic imaging.

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Prices of hardware, cameras and accessibility are plummeting which puts the very same photographic tools that only trained experts could afford or use into the hands of the masses.

Whether related to the change of technology or other factors, the work environment in the US, and globally no doubt, is also in dynamic flux. Many factors are the result of the economy but are also influenced by the new knowledge required to use the new imaging tools, i.e., software. One significant change is that many current 'producers' of visual media were recently customers. What is most important to recognize is that both the users and producers of media now have the same 'tools'. With all this dynamic flux, determining what to teach and with what tools is challenging.

## Some RIT context

Students who enrol in programmes of study at RIT or other programmes of higher education in the US, do so first by applying to a college, then by being admitted into that specific programme. This being the case, all programmes of higher education on some levels are forced to compete with each other to attract the brightest and most talented students available.

The BPC programme is situated within the College of Imaging Arts & Sciences (CIAS), which has an approximate enrolment of just under 3000 students. The college includes the School of Film and Animation, the School of American Crafts and the School of Print Media. The BPC department is part of the School of Photographic Arts and Sciences (SPAS), also a large organization with over 850 students and 32 full-time faculty staff. SPAS has recently celebrated its 100th anniversary in the teaching of photography and it has a portfolio of programmes which include Imaging Systems Management, Imaging & Photographic Technology, Fine Art Photography and Photographic Arts. The sheer size and complexity of the School influences all facets of daily operations as well as the BPC department's challenge in 'staying visible' to perspective students.

In 1996, the department had an enrolment of 96, which represented an all time high, but by the end of the 1999 academic year, the number of students to enrol had fallen to a mere 47. The timing of this decline coincided with the

growth and expansion of the Web and digital imaging. Although fluctuations in enrolment are common, the drop was of significant concern to the faculty. Therefore, with the help of a former student, David Robertson, we began an in-depth self-study. The research phase of the self-study was carried out primarily through a series of surveys to current students of the BPC programme, alumni from the classes of 1994 to 1999, as well as first-year students of the Photographic Arts programme.

### Survey findings

The results from the surveys were interesting and confirmed the thoughts of the current BPC students. They showed that the BPC had an 'image problem' – the programme was described as invisible both in the School and the RIT, and there was a lack of awareness of the BPC's curriculum. Most students were unaware of the range of employment opportunities open to students on the programme, and it was also perceived as being more difficult than it actually is, mainly by the Photographic Arts students. The following strengths and weaknesses were compiled from all surveys.

#### Strengths

*Curricular diversity:* The BPC offers an extensive range of courses from traditional silver-based to digital photography. Students are provided with an environment that provides the opportunity to gain exposure and hands-on experiences to different media exploring film photography, digital imaging, web development, multimedia, and the fundamentals of design. Several specialized areas such as photomicrography and ophthalmic photography are taught within the programme. Students are also taught fundamentals of desktop publishing and basic graphic design services.

*Small class sizes:* With the current number of students in the programme, students have class sizes of no more than 20 students per section. This provides for a direct contact between student and instructor. A student can appreciate having a connection with an instructor rather than being another face in the class. Several of the BPC alumni also commented about the community feeling of the programme and the easy accessibility to the professors.

*Technology:* The curriculum supports courses which feature projects that require an understanding and a practical application of the current technology (digital cameras and software). Within the various courses, the use of 'real world' projects that require the use of specific software (Photoshop, Dreamweaver, Director, QuickTime VR Authoring, etc.) for the successful completion of a project helps to prepare students for the future challenges in the workplace. The BPC programme has its own computers with software, scanners, printers, and a video-editing station within the BPC Laboratory which was considered a huge asset.

*Professors:* The faculty staff is a valuable asset to the programme. Based on the responses on the student and alumni surveys, the professors are seen as knowledgeable and constructive. Students received instruction and personal insights from people who have experiences in the topics of the classes they teach. The faculty staff is young and have a personal passion for what they teach and have not been jaded by age or negative experiences.

#### Weaknesses

*Image/perception:* One of the largest obstacles for the programme is its name and how that name is perceived by prospective students. The use of the word 'biomedical' reflects only a portion of the curriculum within the programme and creates a sense of misunderstanding for prospective students. This misunderstanding seems to lead to a lack of interest in learning more about what is taught. Several students within the programme have shared their stories of difficulties in trying to explain the programme to other students. The name does not communicate the range of opportunities students explore during their studies or after graduation.

*Lack of exposure:* The results from the survey to the Photographic Arts students showed that more than 25% were not aware the BPC programme existed. Of those, 42% were only aware of the programme from a fellow student after coming to RIT.

*Course requirements:* Based on the feedback from the alumni survey, there are areas within the programme curriculum that should be modified to meet the market needs. Some of the suggestions from the alumni included; more digital/software classes including database management, more writing courses, the development of digital video and printing requirements, more graphic design and educational programming classes, as well as teleconferencing technology.

In addition to the surveys, we also analysed the career trends that the students were following to try to gain additional insight. In 1985, a typical class of 12 graduates would include 10 medical photographers, one ophthalmic photographer and one corporate sales/research/business type position. However, in 2003, the class includes seven ophthalmic photographers, four electronic media and imaging opportunities and one corporate sales/research/business type position.

### BPC response

Armed with the knowledge that perspective students came with a preconceived image that the BPC programme is not a 'sexy major', we were forced to develop activities that would increase the department's visibility and change these perceptions. The programme is part of a predominantly art college and the world outside of RIT is in total flux, therefore our response needed to be carefully constructed. Therefore, we developed an action plan that would:

- revise the curriculum
- develop an internal and external PR campaign to increase awareness and visibility of the programme
- improve the perception of the BPC
- consider a name change

## Curriculum

It was decided to expand the current curriculum in order to encompass the many new opportunities that were being identified within the job market. These changes were quite simple in concept with a goal of creating a larger interdisciplinary experience for the student. While the curriculum has been continually revised over the past few years, the new approach needed to be more aggressive and more integrated.

The ultimate objective of our curriculum had been 'to develop attitudes as well as the skills required to be an effective photographic visual information specialist in the life sciences industry'. We decided to place more emphasis on the graphics aspect of what students learn and de-emphasize the photography and biology aspects. These curricula are still incorporated, but they have been put more into the background. For this to be realistic, students would need to be exposed to classes and assignments which established a more interdisciplinary solution.

We also wanted to create a technology-independent learning experience as much as possible that focuses on effective message delivery, not on media used, because technology is so transient. Kodak and other manufacturers of imaging technology products estimate the information imaging field to be US \$395 billion a year business. This confirms for us there will be no shortage of opportunities for highly skilled and motivated people. Additionally we have developed more problems and assignments that we felt develop life long learning approaches.

## Development of ophthalmic teaching

The BPC programme decided to take advantage of the continued demand for ophthalmic photographers in the USA because the job market currently provides more opportunities than there are students in this field. The RIT currently offers the only accredited college courses in ophthalmic photography in the USA. There are three courses offered: *Basic Ophthalmic Photography* encompasses anatomy and physiology of the eye, pharmacology, fundus photography, stereo photography, and an introduction to fluorescein angiography, as well as some disease processes. *Intermediate Ophthalmic Photography* explores further posterior segment imaging including fluorescein angiography, descriptive interpretation, and disease processes. Imaging of the anterior segment is also explored, including slitlamp biomicrography and its various lighting techniques, specular biomicrography and external imaging. *Advanced Applications in Ophthalmic Photography* places students into the clinical setting, working one-on-one

with a faculty member. The faculty member assesses on a case-by-case basis when each student is ready to work alone on photographic assignments with patients. In this fashion, education and experience are balanced to ensure patient care is not compromised.

## PR campaign

We chose to act on this need by having student work exhibited more frequently in the School's display cases; by enhancing the student organization, the Biomedical Photographic Student Association; and by further developing the BPC website (<http://www.rit.edu/~biomed>) and the department's 16-page student publication, the *BPC Bulletin*, which is produced three times annually. Students have been encouraged to play significant roles in all aspects of these activities.

In order to become a centre of activity and therefore be more visible, myself and a colleague from the Imaging and Photographic Technology Department, Professor Andrew Davidhazy, decided to organize a show of 'scientific' pictures in the hope of raising student awareness of this field. Images from Science was created to promote a wider appreciation of scientific photography by showcasing beautiful, data-rich, but rarely seen images drawn from oceanography, geology, biology, engineering, medicine, physics and other fields in the sciences (<http://>). The idea was first conceived in spring 2001 and by mid-summer it was determined that the project would comprise three major components: a photographic exhibition at Rochester Institute of Technology, a related Web gallery, and a four-colour printed catalogue, all budgeted at US \$17,000, none of which was in hand. The Internet was selected as the principal promotional tool, in the hope that it would provide an efficient, low-cost means of attracting the worldwide interest and participation required. Acceptance into the juried show was based on the photograph's impact and aesthetics, the degree of difficulty and other related criteria. A maximum of four images could be submitted for judging.

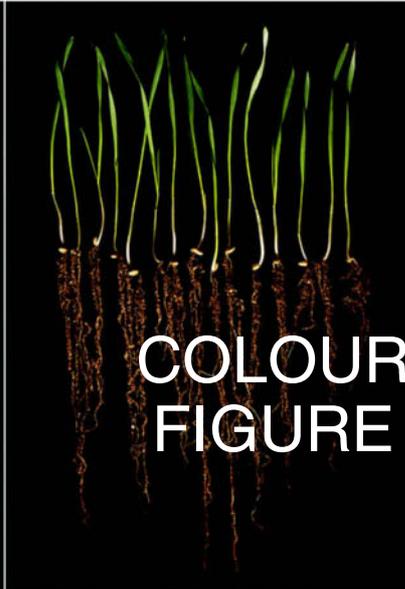
Judges were invited at various stages of the project, and it was agreed that an international project required international judges. Lacking funds to support travel, a judges' website was developed, complete with all entries and support materials. Judges were selected from the ranks of scientists, scientific photographers, educators, practising artists, and photographic editors, with most representing organizations which gave additional prestige and validity to our project. Fifty-eight photographs were ultimately chosen for inclusion.

Interest in Images from Science was more than could have been imagined. The website has had more than 13,000 visitors since it was published in October 2002. The School has received both national and international visibility to our disciplines that would have otherwise been impossible.

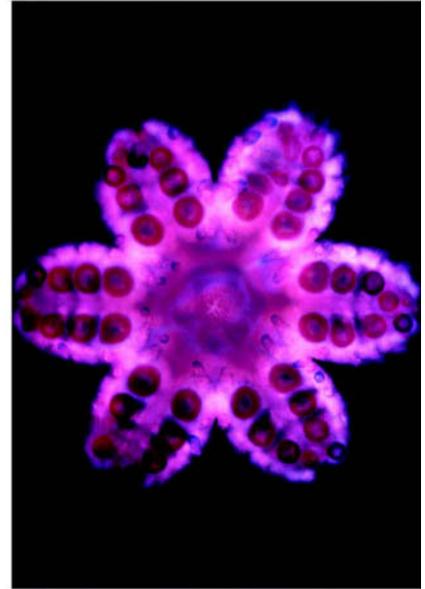
(a)



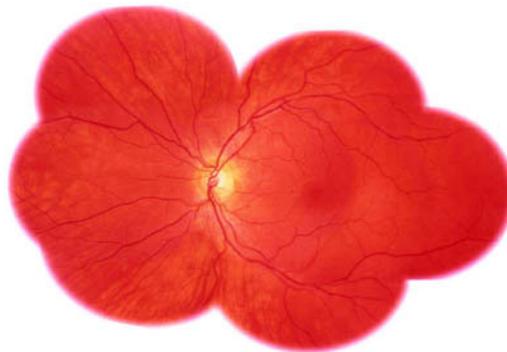
(b)



(c)



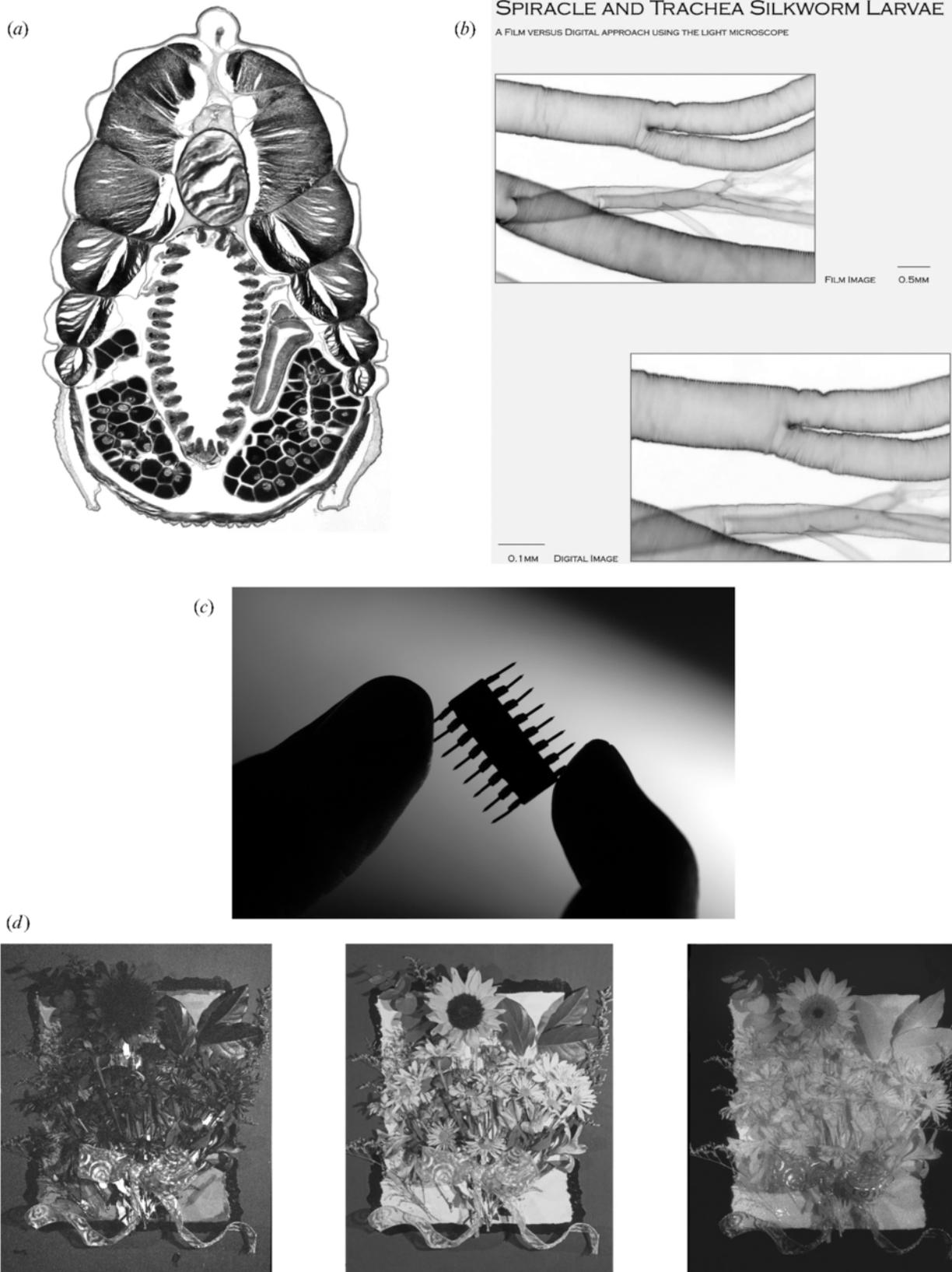
(d)



(e)



**Plate 1.** (a) Allison Cochran. This photograph was submitted in request of an effective illustration chronicling four sides of a subject to demonstrate consistent magnifications and photographic treatment. (b) Steve Passmore (l) and Anastasia Gianas (r) (two-root composite). Students were asked to create an illustration for an article that suggests 'root system development' using still photography. (c) Allison Cochran. This darkfield photomicrograph of a starfish embryo was photographed using a  $4\times$  objective. (d) Deborah Sharp. This retinal map of a healthy student shows the individual frames of the seven standard fields stitched together. (e) Brian Steinmann. Students were asked to use an electronic flash and make multiple exposures on a piece of moving 35-mm film using a SLR camera with a 50-mm lens.



**Plate 2.** (a) Emily Marshall. This photograph of *Amphioxus* was made using a  $2\times$  objective on a compound microscope with a digital Spot camera. (b) Emily Marshall. This assignment asked students to produce a 35-mm colour slide and a direct digital picture from the exact same field using a biological subject. (c) Steve Passmore. Students were asked to photograph in a style that creates interest by using innovative approaches. (d) Jillian Patterson. Students were asked to compare one subject using ultraviolet, infrared, and visible light energy.

## Improving perception

Richard Zakia, Professor Emeritus at the RIT, states that perception is reality for many people – they will see what they are looking for, as well as seeing what they expect to see.<sup>2</sup> Somehow we needed to break the negative perception cycle that was endemic to our presence in the School. Without doubt, Images from Science has had a noticeable impact on dispelling this image, but another activity has been even more advantageous. Knowing that the majority of 18-year-olds who have just completed secondary school are not aware, nor impressed with this field, we decided to actively recruit from the first-year photographic art classes. RIT is on a trimester system, so in the last session or spring term, the BPC department delivers an exciting lecture to this group of more than 180 students in the hope that some will change majors rather than leave RIT. Over the course of the last 3 years, more than 30 students have changed majors at this stage, and the trend appears to be ongoing.

## Name of the programme

Most responses focused on the idea that we might change the department name. It was readily apparent the name was an immediate eliminator. Alumni were split 50:50 with regards to a name-change, and many suggestions were put forward from a range of sources: Photographic Communications; Photographic and Digital Communications; Photography and Media Communications; Imaging Communications; Visual Communications; Digital/Visual Communications; Photographic and Digital Media; Imaging Media; Multimedia Technology/Sciences; Technical Photographic Communications; and Biomedical Imaging.

In order to challenge and gain more perspective about the name, a new programme option, Photographic Communications (PC), was added to the School's website (<http://photography.rit.edu>). The site allows students to request additional information for any programme they are interested in; when the 'request more information' box is clicked for the PC programme, the description for the BPC programme is displayed.

The requests are processed monthly, and between May and June this year (a period of approximately 20 days), there were 72 requests for further information. The BPC programme received 12 enquiries, while the PC programme received 23 enquiries. This pattern has been observed for over 2 years and our response has been to mail BPC information packages to all of the inquiries. At this moment, applications to BPC have almost doubled,

from 20 a year ago to almost 40, although not all applicants are accepted or, indeed, enrol.

## Conclusions

The BPC is a unique educational programme both in the RIT and in the United States. It draws students from all over the country and the faculty staff work hard to create a rich academic experience for the students, which prepares them for the ever-changing job market. In this dynamic world of electronic imaging, the BPC graduates continue to serve customers, using digital imaging with a host of new display devices and serving a much broader constituency than ever before. However, encouraging students to enrol on the programme has been increasingly difficult.

There seem to be strong indicators that a period of prolonged instability will persist with the continual release of newer, better, and cheaper tools for all of us. Consequently, we now teach students how to adapt to learning new things. Our rationale is that you need to do this before your clients do! In the USA, the larger media centre services appear to be decentralizing into smaller 'local' departments. It is imperative to think differently to what was done in the recent past because the past is the past. Forming new alliances seems core to all successful migrations to the future. For BPC this has been achieved through a more active Alumni relations' initiative, and the development of new alliances in the ophthalmic medical diagnostic imaging community.

One of the most important lessons learned from this study is the power of perception and the ever-present need to be visible. The old adage out of sight, out of mind significantly affected our presence in this community, more than we were aware. Consequently, the BPC department works to be visible at every opportunity, no matter how trivial. With regards to the name-change, the jury is still out as enrolment to the programme has risen to 80+ students, with strong interest for this academic year.

Plates 1 and 2 show the range of topics covered by students on the BPC programme.

## References

1. Peres MR. Teaching biomedical photographic communications into the next century. *J Audiovis Media Med* 1999; **22(4)**: 178–85.
2. Zakia R. *Perception and Imaging*. London: Butterworth-Heinemann, 1997.