UNIVERSITY OF BATH

Dr Christos Vasilakis
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The Research

Christos works in operational research, a scientific field that combines mathematics, computer science and management. He's interested in how mathematical modelling and computer simulation techniques can resolve healthcare delivery problems. Through such models and techniques, the impact of changes or interventions on patient and system outcomes can be tested without resorting to experiments in real-life systems. Christos is Director of the Centre for Healthcare Innovation & Improvement (www.bath.ac.uk/chi2/), a multi-disciplinary centre focused on solving the practical challenges of health and social care systems.

The Engagement:

The key publics: Health and social care managers and professionals.

The type of engagement: Collaborating with these publics in a dialogic way to identify practical problems, develop research ideas and to secure both soft and hard data to inform and resolve research problems.

Christos' initial interaction with health and social care managers and professionals is usually based on their identifying a problem that requires an analyst to help solve. They then form a project team (often comprising researchers from across disciplines, clinicians, managers and service users) to scope the problem. To ensure buy-in from the healthcare partner, Christos finds it beneficial to have a nominated champion from the organisation to co-lead, or even lead, the project:

"If a healthcare partner is willing to take a leadership role, it helps the project to have practical, not just academic, impacts embedded into its core aims. The individual can also facilitate access to relevant parts of the organisation."

To collect data Christos frequently undertakes observations of practitioners at work, with the research problem shaping what's observed. In the past, he has observed: clinics; operations; theatre procedures; clinical meetings; patient appointment systems and so on. Christos then uses other techniques to deepen understanding of the situation:

"I often look to bring differing practitioners together, eliciting information from them through problem-structuring methods."

One common method he uses is **process mapping** wherein practitioners co-create maps of a particular process (e.g. the care of a patient with a hip fracture). The resultant graphic highlights practitioners' unique roles and how they interact:

"Such maps are an output of the research in their own right. Healthcare systems are highly complex and these maps help practitioners to see the 'bigger picture', the context for their role."

Having collected the data, Christos always presents it back to the project team, seeking their input on what might be missing, potential next steps, or how study aims and objectives might be refined. He has found that an interactive relationship with the project team can bring real benefits:

"Not only do I benefit from the unique insight and perspectives of others on the team, they hopefully learn something from me! So in a past project, I've been able to teach healthcare professionals about computer simulation, an understanding that led them to appreciate the integrity of the research and its findings."

The Motivation:

As an operational researcher, Christos is driven to engage as a means to both inform the definition of the research project itself and to develop mathematic models that have practical value for those engaged. But this hasn't always been the case with operational research:

> "A while ago and contrary to the origins of Operational Research during the Second World War, a lot of healthcare operational research was based on problems dreamt up by academics in their so-called 'ivory towers'. I'm from a generation of researchers trained in the philosophy that close collaboration with professionals is an essential element of research."

Through such collaboration, Christos seeks to learn as much as possible about a specific problem so that he's better able to understand and address it. This is a very practical motivation to engage; he's also driven by more personal motives:

> "My research career started in a teaching hospital in London where I was introduced to diverse patients. I recognised early on that behind the data lay real people and real issues for who I could hopefully make a difference."

The Professional Development:

Through his research, Christos has developed extensive networks which he's drawn upon when looking to explore his own academic ideas:

> "Sometimes I have research ideas that I'm looking to test out and explore, ones that may not be critical to the aims of a particular organisation. From past projects, I've a number of contacts that I can draw upon to source case study settings as a test bed."

The collaborative nature of his research has led Christos to develop strong interpersonal skills and an ability to empathise with his key public. He's found a flexible approach which recognises the highly demanding and busy nature of healthcare professionals' roles, works best. Although it sometimes means unusual working hours:

> "I work on the basis that I'm the one with the flexible agenda and flexible diary. Surgeons, for example, are very early risers. When I was working regularly with a cardiac surgeon in Vancouver, we used to meet at 6am before he started open heart surgery at 8am!"

Christos (far right) with some of his collaborators

> "The co-creation inherent to my research means that practitioners feel ownership over the end products. Consequently, my research outcomes are more likely to impact upon their work."

This approach has been appreciated by Christos' research partners. He believes that the approach: demonstrates a sincerity of intent; has fostered mutual respect on both sides; and has led to a willingness to share experiences.

The Learning:

Because healthcare professionals are very busy people it can take time to forge new partnerships. As with any system, healthcare ones can be rife with internal politics and on occasion, Christos has found himself in between professional group rivalries. He's therefore conscious to stay attuned to partnership dynamics, anticipating any issues and managing them accordingly. Generally though, by the time a project is launched, potential issues have already been mitigated:

> "I have many meetings with many different people. You have to accept that not every relationship will flourish; only some will materialise into full-grown projects. This tends to mean that by the time you get to that stage, you've got the right, committed team in place that can work productively with one another to see the project through."

Finally, Christos has learnt that it's important to recruit the right people to project teams. For his research, 'right' often means those towards the top of the healthcare organisation as they're well-placed to leverage any change to processes that might emerge from the research.

Top tip:

> "For applied research, don't leave engagement as an after-thought, as 'window-dressing'. You need to engage right at the beginning of your research. This will then help you to approach relevant literature and to formulate / refine your research questions."

Chat to Christos further about his experiences – c.vasilakis@bath.ac.uk; 01225 383361