

The danger of two cultures

A 50-year-old essay on the failure of communication between scientists and literary intellectuals might offer lessons for the future of modern finance, argues David Rowe

This year marks the fiftieth anniversary of CP Snow's essay *The two cultures and the scientific revolution*.¹ In it, Snow highlighted the often wilful lack of communication between scientists and literary intellectuals.² In too many cases, Snow argued, formal training compounded inherently different mindsets to produce a nearly complete lack of understanding and communication across these two cultures.

He was even-handed in assigning blame. Scientists, he found, often had little interest in or exposure to imaginative literature. He quotes one scientist (admittedly one of less than first rank) as saying: "Books? I prefer to use my books as tools." On the other side, literary intellectuals were often blithely oblivious to the scientific edifice of the physical world as "in its intellectual depth, complexity and articulation, the most beautiful and wonderful collective work of the mind of man".

Snow's essay came to mind as I reflected on a similar problem that afflicts the practice of modern finance – namely, the split between quants and the larger community of traditional finance managers. Quantitative pricing techniques and statistical risk management are little more than opaque black boxes for all too many general financial executives. What is more, those who do understand the technical details often have limited insight into broader structural and behavioural issues. They also have little incentive to make their work more transparent to outsiders since this would undermine the mystique that surrounds their skill set.

In some cases, a lack of technical insight has little or no serious consequences. After all, few of us can understand the technical mechanics of a modern automobile but that does not inhibit our ability to drive.

In the case of financial management, however, the impact of two cultures can be serious indeed. This is primarily because running a financial institution demands a constant series of large and small decisions under uncertainty. Such decisions can never be effective if they are made mechanically. Effective decisions must reflect experience and judgement *conditioned by the available empirical evidence*. As finance has become ever more complex and quantitative, the communications gap between finance's two cultures has become ever more consequential. Most senior bank managers are unable to weigh the

subtle details of modern finance, and few state-of-the-art quants are well equipped to assist them (even if they were motivated to do so.)

One example of this is the fragile nature of the Gaussian copula model that lies at the heart of collateralised debt obligation (CDO) pricing. This model is really little more than a descriptive framework for traders to communicate with each other – it is not a structural model whose properties can be empirically tested against some corresponding complex reality. Sometimes it is said that implied correlations from this model are analogous to implied volatilities in options markets (which have similar inconsistencies across options differing only in their strike prices). In the options market, however, there is an observable historical price volatility that can be tracked against market-implied volatilities. No such objective historical data is available for CDO-implied correlations. One crucial implication of this is that implied correlations, and hence objective prices for CDO tranches, are critically dependent on market liquidity. Without liquidity, valuing such tranches is reduced to little more than guesswork. If banks' senior management had realised this critical dependence on liquidity to determine fair values, they might have hesitated to hold such massive amounts of these securities on their balance sheets.

A closely related problem is the unquestioned confidence that even supposedly sophisticated senior bank managers placed in the AAA rating assigned to senior tranches of subprime mortgage CDOs. A combination of blind faith in rating agencies and/or the seemingly sophisticated analytics being applied prompted many managers to treat these securities as equivalent to AAA corporate bonds. A little thought about the paucity of data available to estimate behaviour deep in the tails of the loss distribution of subprime portfolios should have raised serious doubts about both the reliability and stability of such AAA ratings. Most senior managers didn't have sufficient quantitative insight to recognise the need to ask the question in the first place.

In his conclusion, Snow says: "Closing the gap between our cultures is a necessity in the most abstract intellectual sense, as well as in the most practical. When those two senses have grown apart, then no society is going to be able to think with wisdom." It seems to me the same is true of financial institutions. If they are going to be able to "think with wisdom" in the future, we must begin to close the gap between the cultures of quantitative finance and general financial management. ■

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¹ Snow C, 1959, *The two cultures and the scientific revolution*, Cambridge University Press

² Snow was a trained scientist who also wrote imaginative literature. As such, he was uniquely qualified to assess the problem of the two cultures