

TRIBUTE TO ROBERT JAMES BLATTNER

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I was very saddened when I learned of Bob's declining health. And now the thought that I won't see him again frightens me.

I first became aware of Bob when I was about to complete my MA thesis at Tohoku University in 1958. Bob had proved a fundamental theorem: every separable locally compact group admits a free action on the approximately finite dimensional factor \mathcal{R}_0 of type II_1 . The Tohoku School of operator algebras was excited by this result as they had only been able to prove the result for a **discrete** group. However, the importance of Bob's result was not immediately recognized by the wider public as seen in the Math Review written by F. Mautner: the field of operator algebras was not mature enough to recognize the significance of this result and to appreciate it. The recognition came only in the 1970's when the study of actions of locally compact groups was spearheaded by the mathematical physics group headed by Haag, Kastler and others because such actions represent the symmetries and the time evolution of a physical system. Bob's work was definitely far ahead of the time. Now with Popa's recent discovery of the existence of a factor of type II_1 with no outer automorphism, the importance of his result stands out clearly.

Later, at Tohoku University I studied Bob's extension of G.W. Mackey's theory of induced representations of a **separable** locally compact group to the **general case**. This work did much more than merely provide a non-separable version of Mackey's theory; most importantly, it also provided a new and very elegant way to look at induced representations of continuous groups. Thus Bob was one of my heroes in functional analysis even before I came to the US, and his presence at UCLA was a factor in my decision to visit there in 1969 and to join its staff in 1970.

The separability assumption in general occupies a peculiar spot in functional analysis. While many of our objects satisfy some kind of countability condition, there are instances where we must step outside of this framework. For example, the Banach space $C[0, 1]$ of all continuous functions on the unit interval with the sup norm is an important object in analysis; it is separable, but its dual $M[0, 1]$, the Banach space of signed bounded Borel measures on the unit interval is not. Another example is the Calkin algebra, the algebra of all bounded operators on a separable infinite dimensional Hilbert space modulo compact operators; the Calkin algebra is non-separable and does not

even admit any non-trivial representation on a separable Hilbert space. However it is essential to understand the Calkin algebra for the Atiyah - Singer Index Theory, surely one of the triumphs of the 20th century mathematics.

After I joined UCLA on 1969 as a visitor, I was so pre-occupied with the new development in von Neumann algebras of type III, that I unfortunately did not find enough time to discuss mathematics with Bob even though we shared many interests. Also Bob was also pretty busy on his own so, regrettably, our paths did not cross in any serious way. The overlap in our interests became even more apparent when Bob was working on duality for Hopf algebras in the 1980s and 1990s. Unfortunately, at that time I was absorbed (along with many collaborators) in the cocycle conjugacy classification project, and another opportunity for significant interaction with Bob went begging. Despite these missed opportunities, I was lucky that my office at UCLA was close to Bob's and we were able to enjoy many informal discussions.

Bob also took on administrative roles at UCLA, and was Chair of Department in the late 1980's. One development from this period of particular importance to me was the appointment of Sorin Popa; Bob played an important role in this appointment, far beyond the usual.

Bob served the mathematical community as an elder statesman within UCLA as well as outside of the campus for instance in the American Mathematical Society.

I will miss Bob badly as a colleague, a mathematician and a friend.