**Introduction**

Felix Hausdorff was the first mathematician to use the notion of open sets in the study of continuity properties (1914). M.H.Stone linked topology to lattice theory by establishing a representation theorem for Boolean algebras (1934,1936).

“Every Boolean algebra is isomorphic to the Boolean algebra of open-closed sets of a totally disconnected compact Hausdorff space”.

(M.H.Stone,[70]).

Charles Ehresmann and his pupil Jean Benabou (1957) were the first to look at complete lattices in which finite meets distribute over arbitrary joins as “generalized topological spaces”. They called such lattices “local lattices”. The term “local lattices” was later replaced by frames, by C. H. Dowker.

Quotient frames (sublocales) have been studied by several authors. The works of Dowker and Papert (1966) and Isbell deserves special mention. Product locales have been studied by Dowker and Papert (1977). The pioneering paper “Atomless parts of spaces” by J. R. Isbell took several mathematicians to the area of frame theory and the new theory grew rapidly.

The book “Stone Spaces” by Peter Johnstone is a primary source for reference.

Frame theory is lattice theory applied to topology. So the basic notion is the lattices of open sets and not the points. So it is a “Pointfree topology”.

The notion of a frame can be viewed as an extension of the notion of a topological space.
“The generalized spaces will be called locales”. “Generalized” is im-
precise, since arbitrary spaces are not determined by their lattice of open
sets; but the insertion from spaces to locales is full and faithful on Haus-
dorff spaces”. (Isbell, [37])

The category of frames is denoted by $\mathbf{Frm}$. The dual category of $\mathbf{Frm}$
is $\mathbf{Loc}$ and its objects are called locales.

It is surprising to see that the behaviour of these generalized spaces
is often better than that of topological spaces. For example, coproducts of paracompact frames are paracompact while products of paracomp-
compact spaces are not necessarily paracompact. Also coproducts of regular
frames preserve the Lindelöf property while products of regular spaces
do not. Another advantage of frame theory is that they often yield con-
structive results. For example, the proof of Tychonoff product theorem
and the definitions of the Stone-Čech compactification and the Samuel
compactification are completely constructive while their classical coun-
terparts require the Axiom of choice or some of its variants. (A. Pultr,
[64])
One can also look at frames as the algebras for the “Logic of finite observations”. Steven Vickers introduces frames in this form (S. Vickers, [74]). Steven Vickers introduces topological systems subsuming topological spaces and locales.

“We have seen frames, as systems of finite observations, but with no formalization of what they might be observations of. We now remedy this. The notion that we define here is not a standard one, but it summarizes our approach and gives a convenient framework for discussing the traditional ideas”. “My justification for introducing them is, first, that it seems pedagogically useful to have a single framework in which to treat both spaces and locales and, second, that with domains—which are both spaces and locales—it is useful not to have to commit oneself making them concretely either one or the other”. (S. Vickers, [74]).

The idea of topological groups arose in connection with the study of continuous transformation groups. It was O. Schreier (1926) who defined abstract topological groups and F. Leja (1927) introduced the notion in the form used today. Later the theory developed with the works of R.
Baer (1929), E. Cartan (1930), D. Van Dantzig (1930), A. Haar (1933), J. Von Neumann (1933) and several others.

The characters for finite abelian groups were introduced by G. Frobenius (1896). The idea of making the characters of a group into a group was done by Pontryagin (1932). Wiener and Paley (1933) and A. Haar (1933) also made remarkable contributions to this concept. N. Ya Vilenkin (1951) made elaborate computations of character groups for both locally compact and non-locally compact abelian groups.

“Character groups are important in large measure because of Pontryagin—Van Kampen duality theorem—asserting that the character group of a character group is the original group”. (Hewitt and Ross, [32]).

Hundreds of research papers appeared in various journals in connection with the Pontryagin-Van Kampen duality theorem.

A discussion of Bohr compactification of a locally compact abelian group can be seen in (Hewitt and Ross [32]). Bohr compactifications of topological semigroups have been studied in (De Leuuw and Glicksberg, 1961), (Bergrlund and Hofmann, 1967) and (Anderson and Hunter,
1969). A discussion of Bohr compactification of a topological semigroup is given in (Carruth, .....[19]).

Among the concrete structures in the theory of topological groups, a prominent role is played by Lie groups. The global study of Lie groups requires topological methods. Even though the theory of topological groups was developed mainly to study groups of Lie type, later the theory proved to be useful in purely algebraic contexts also. Examples are power-series rings, Galois groups of infinite field extensions and p-adic groups.

Localic groups were studied by G. C. Wraith [78]. A few papers were published in connection with localic groups ([17], [40]), [78], [79]). Unfortunately not much work in this area is done so far.

“Locales are essentially a generalization of topological spaces—certainly a generalization of Hausdorff spaces. However, localic groups are not a generalization of topological groups. Reasons are mounting for thinking that localic groups are a considerable improvement on topological groups. This could be a mistake; proofs in locales must be written ‘in
a mirror’, that is, in the dual category of frames, and enough basic ques-
tions remain unsettled to make it foolhardy to assert flatly that localic
groups are better”. (Isbell....[40]).