The Great Patent Grab

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Agenda

I. The overlooked “patent winter”: the postwar experiment in weak IP/strong antitrust can inform current policy analysis.

II. Postwar innovation regime (1938-1975)
   • Weak patents/strong antitrust
   • Explicit compulsory licensing via antitrust enforcement
   • Implicit compulsory licensing via govt R&D funding

III. Mixed welfare effects
   • Robust innovation but reliance on govt funding and declines starting mid-1960s.
   • R&D concentrated among large firms. Little change in concentration and turnover.
   • Organizational bias: Weak IP advantaged large integrated firms with strong non-IP complementary assets and channels to govt funding.
The Postwar Weak Patents Regime

• Patents – limited expectation of surviving legal challenge:
  • 1941: S. Ct. adopts “flash of genius” test for patent validity (Cuno Engineering)

• Antitrust – limits on patent enforcement and licensing:
  • 1931, 1942: S. Ct. adopts and expands the “patent misuse” doctrine.
  • Through early 1970s: courts and agencies expand “per se” treatment of multiple patent licensing practices.

• Steps toward compulsory patent licensing:
  • 1938-41: “TNEC” hearings document alleged patent abuses by cartels and adopts FDR proposal for blanket compulsory licensing.
  • 1942: DOJ Antitrust advocates invalidation in case of “unreasonable” use of patents.
  • 1945: Congress rejects compulsory licensing proposal.
Patenting activity by U.S. inventors (1935-1975)

Sources: USPTO, US Bureau of Econ. Analysis.
Explicit compulsory licensing

• 1938-1975: Antitrust agencies secured 136 compulsory licensing orders. 88% implemented through consent decrees.

• 1945, 1947: S. Ct. mostly upholds use of compulsory licensing remedy.

• Notable targets: Alcoa (1942, 48); GE (1942, 46, 48-49, 53-54); Du Pont (1945, 47, 52); Corning (1946-49); Kodak (1948, 54); IBM (1956), AT&T (1956); RCA (1958); Xerox (1975)
Compulsory Licensing Orders in Antitrust Enforcement Actions (1941-1975)

U.S. v. Hartford-Empire: S.Ct. confirms constitutionality of compulsory licensing order as antitrust remedy.
### Characteristics of compulsory licensing orders (1938-1975)

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<th>Characteristic</th>
<th>Incidence (Pct. Total Orders)</th>
<th>Impact on Severity</th>
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<tr>
<td>Reasonable royalty</td>
<td>82.4%</td>
<td>Mitigates</td>
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<tr>
<td>Royalty-free</td>
<td>32.4%</td>
<td>Enhances</td>
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<tr>
<td>Patent dedication</td>
<td>15.4%</td>
<td>Enhances</td>
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<tr>
<td>Applies to future patents</td>
<td>39.9%</td>
<td>Enhances</td>
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<tr>
<td>Requires reciprocal license</td>
<td>11%</td>
<td>Mitigates</td>
</tr>
<tr>
<td>Must provide technical know-how</td>
<td>41.2%</td>
<td>Enhances</td>
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Limited information on post-order licensing activity. Best available information indicates highly variable levels. Most intensive licensing in case of orders secured through litigation against largest firms (Hollabaugh and Wright 1960).
Implicit compulsory licensing

Sources of R&D Funding (1941-1985)

Sources: NSF; Statistical Abstract
Military Background to Postwar IP/Antitrust Policy

• 1938-41: “TNEC” hearings allege that international patent-based cartels involving German firms inflate input prices for U.S. military.

• 1942: Congress enacts Royalty Adjustment Act for renegotiation of patent royalties in defense contracts.

• WWII: Federal agencies adopt “government title” policy in R&D contracts. DOD permits “contractor title” but retains non-exclusive, zero-royalty license.
R&D funding as patent/innovation policy

- **Contractual constraints on ownership and use**: Federal funds disbursed under terms that vested title to patents in the govt (AEC, NASA) or granted the govt a non-exclusive, royalty-free license (DOD), generally subject to agency waiver. DOD contractors often subject to second-sourcing requirements.

- **Large-firm bias**: Bulk of federal R&D funding was allocated to large corporations in aerospace, computing and communications. During 1946-1962, 20 firms received approx. two-thirds of federal R&D funding (Watson and Holman 1967).

- **Weak commercialization**: With limited exceptions, weak market interest in non-exclusive licenses to govt-owned patents (Harbridge House 1968). Prompted more contractor-friendly patent ownership and licensing policies relating to federal R&D funding (Kennedy 1963, Nixon 1971).
Welfare Effects of Postwar Weak IP/Strong Antitrust Regime

• Postwar period exhibited robust innovation, principally in the corporate labs of large firms targeted by compulsory licensing orders (Bell Labs, IBM, Du Pont, RCA, GE).

• Scherer (1959, 1977) concludes that innovation can thrive without secure patent protection. This interpretation is challenged by several facts:
  • Various innovation metrics declined starting mid-1960s.
  • Industry R&D was heavily funded by govt. Industry R&D activity and federal R&D funding follow “rise and decline” pattern.
  • R&D activity concentrated among large firms, the principal recipients of federal R&D funding.

• Alternative interpretation: compulsory licensing and the weak IP regime promoted innovation by large integrated firms with strong complementary non-IP assets. This may have distorted the organization of innovation and commercialization activities and, in particular, suppressed entry by smaller R&D-specialist firms.
National R&D Intensities (1953-1975)

Sources: NSF data; U.S. Bureau of Econ. Analysis
Median R&D employment intensity of Fortune 100 Firms (1955-1975)

R&D employment intensity = R&D personnel/total personnel

Source: Industrial Research Laboratories reports (R&D personnel); Fortune rankings (total personnel)
Industry R&D expenditures by firm size (1957-1975)

- % Small Firm (<1K empls.)
- % Large Firm (>1K empls.)

Source: NSF
Effects on Concentration and Turnover

- **Existing evidence on concentration**: Concentration during postwar period increased moderately or exhibited stable high levels (Shephard (1964); Mueller and Hamm (1974); Caves (1980)). Scherer (1977) finds no statistically significant effect of compulsory licensing orders on concentration levels in targeted industries.

### Movement in Fortune 100 rankings (based on revenues)

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<tbody>
<tr>
<td>Fortune 100 Firms (1955)</td>
<td>100</td>
<td>72%</td>
<td>86%</td>
<td>-4</td>
<td>-9</td>
<td>-11</td>
</tr>
<tr>
<td>Fortune 100 Firms (1955) Targeted by “CLP”</td>
<td>24</td>
<td>79%</td>
<td>100%</td>
<td>-2</td>
<td>-5.5</td>
<td>-11.5</td>
</tr>
<tr>
<td>Fortune 100 Firms (1955) Not Targeted by “CLP”</td>
<td>76</td>
<td>70%</td>
<td>82%</td>
<td>-4</td>
<td>-11</td>
<td>-11</td>
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1960: Emhart (successor entity) reports that, after 1945 order, Hartford-Empire converted from R&D/licensing to mfg/distribution business.
Case Study II: Alcoa (1930-1975)

- Patent Applications
- DOJ files suit
- Compulsory licensing orders
- Alcoa found liable under Sherman Act, Sec. 2 (U.S. v. Alcoa)

Sources: Google Patents; Industrial Research Laboratories (number of R&D personnel)
Preliminary lessons from the postwar “patent winter”

1. The postwar innovation regime is not a model of a self-sustaining weak-IP innovation economy. Firms were substantially reliant on governmental transfers and innovation declined as those transfers were reduced.

2. Explicit and implicit compulsory licensing, combined with general reduction in patent strength, did not challenge incumbents.

3. Weak IP rights advantage integrated firms who can most easily access complementary non-IP assets to extract returns from R&D. This may distort organizational structures for innovation and deter entry by smaller R&D-specialist entities.